Vol. XXV OCTOBER 1931 No. 10

The EXCAVATING ENGINEER

Front Cover Illustration: Looking out into the open cut from the west portal of the new Big Bend Tunnel.

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Contract Let for First Unit of Middle Rio Grande's Irrigation System....Cochiti Diversion Works

Holing Through the Big Bend Tunnel

Modern Roads Replacing Creek-Bottom Trails Through Kentucky Hills

1/2-yard
5/8
3/4
7/8
1
1-1/4
1-1/2
1-3/4
2
2-1/4
2-1/2
3
3-1/2
4
4-1/2
5 and up to 16 yards

Shovels
Drag-lines
Clam-shells
Lifting Cranes
Drag-shovels
Magnet Cranes
Tunnel Shovels
Dredges
Drag-line Buckets

Gaso-line
Diesel
Gas + Air
Electric
Steam
Diesel-Electric

Factory rebuilt
Factory reconditioned

SHOVELS

DRAGLINES

CLAMSHELLS

CRANES

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1—¾-yard gasoline shovel with clam-shell equipment
1—⅞-yard steam shovel
1—1-yard gasoline shovel
1—1-yard Diesel shovel with dragline equipment
1—1¼-yard gasoline shovel with drag-line equipment
1—1½-yard gasoline shovel with drag-line equipment

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(Neither reconditioned nor rebuilt)
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A-408

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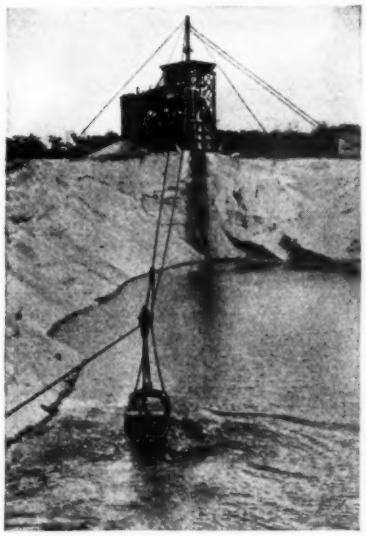

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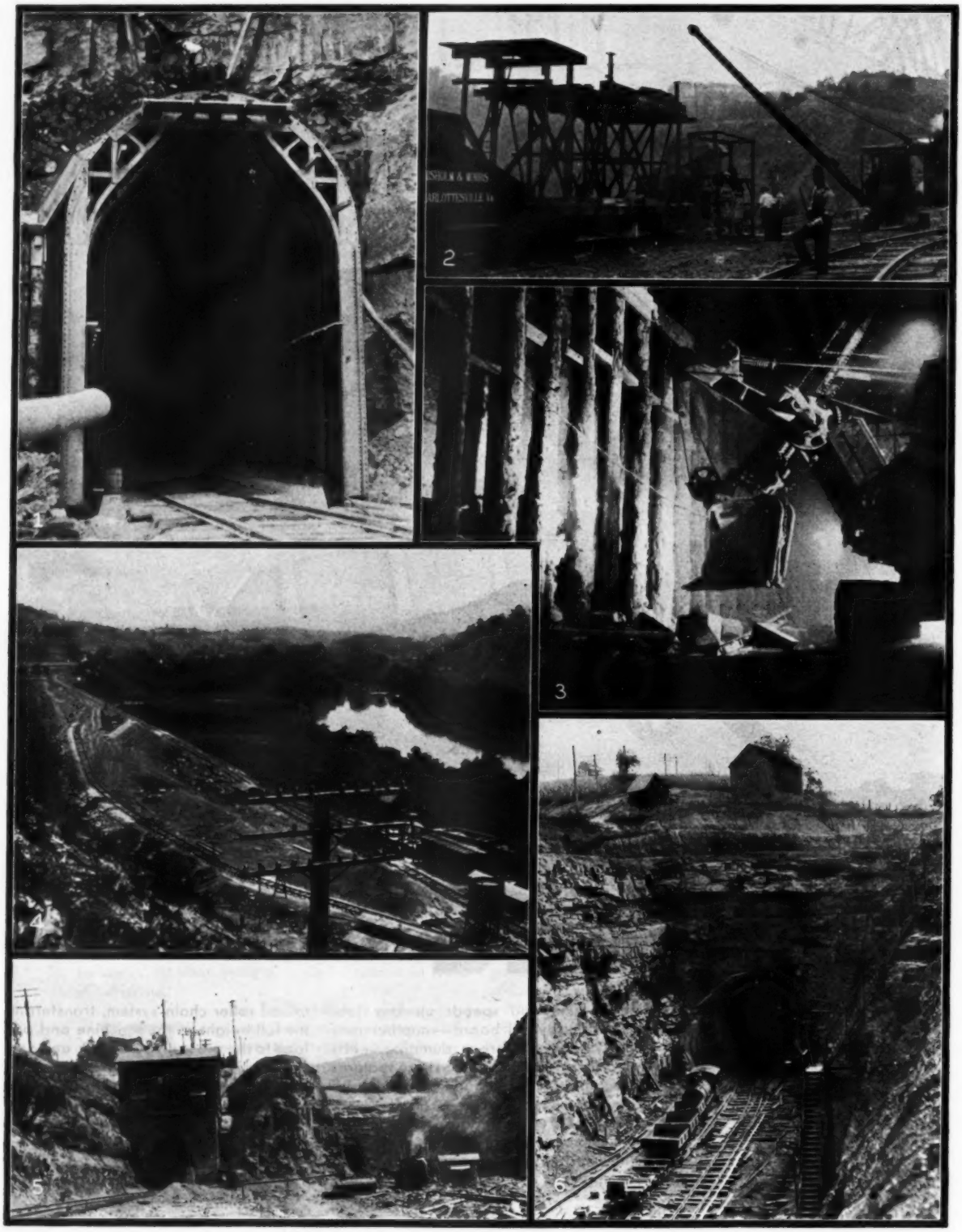

Construction Views of West Virginia's New Mile-Long Tunnel

1. Preparing to pour the lining in the east portal. 2. Loading the concrete gun behind the scaffold car from which the Blaw-Knox forms are placed. 3. By the lights of the Bucyrus-Erie 1030 tunnel shovel we look over the timbering used in the west tunnel workings. 4. Looking out over the field which forms the new approach to the twin tunnels. The Green Briar River is at the right. 5. The west entrance with the old tunnel portal at the left and the new tunnel entrance through the approach cut at the right. 6. The west entrance showing the heavy rock cut of the approach.

The EXCAVATING ENGINEER

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Holing thru the BIG BEND Tunnel

Haley, Chisholm & Morris find modern methods profitable in driving twin tube on longest C. & O. tunnel.

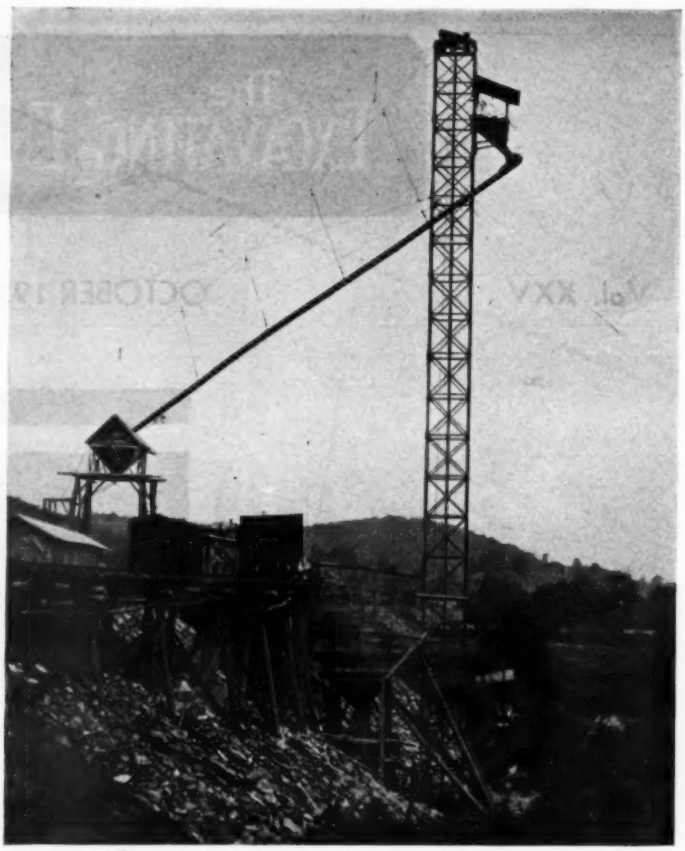
The Bucyrus-Erie 1030 electric moves back from the face to wait for the blast.

BACK IN 1872-73 when the C. & O. put through the original Big Bend tunnel on their line near Talcott, West Virginia, the mightiest of the drillers, according to a negro legend, was a big buck, by name, John Henry. His mighty muscles behind the sledge drove the drill steel at a pace which none of the other black boys could equal and his feats of strength became a matter of considerable fame and local pride.

While the work was in progress an effort was made to interest the contractors in the then new mechanical steam hammers for drilling. The manufacturers succeeded in obtaining permission to demonstrate the new device on the job with the promise that, if they could drill faster with their steam hammer than John Henry could by hand, the job would be handled with the new equipment.

A steam line from a locomotive was run to the heading, the new hammer was set up and the manufacturer's representative set to work to put in his drill holes. At the other side of the heading worked John Henry, thick lips parted in a smile that displayed flashing white teeth. He sang a negro folksong that marked the timing of his hammer and echoed from the rock walls.

The day wore on. John Henry's bare back and



The concrete plant makes maximum use of gravity to cut material handling costs.

shoulders gleamed glossy black beneath the trickling sweat in the light of the flickering torches. No longer could he waste breath in song—the only sound was the ring of his hammer on the steel, leading that of the other black boys of the regular drill crew, the hiss of steam, and the hammering of the steam drill. But John Henry held the lead.

Afternoon came—the big black still drove on, his breath coming in short gasps, the veins standing out like throbbing cords across his temples and his neck. The other negroes sang for him—his white boss praised him—suggested a needed rest. John Henry glanced at the steam drill and its tally of holes, grimly shook his head. All records for the tunnel had been broken — all records men knew of or had heard the old timers tell about. But John Henry and the steam drill drove on.

At the end of the shift the steam man pulled his hot drill from the hole. He was beaten. John Henry flung his shirt over his shoulders and staggered down the ladder out toward the daylight. Other negroes caught him up—carried him on their shoulders back to camp. He laughed and waved his arm to cheering friends.

Next morning John Henry was dead. But the steam drill men had gone and the rest of the old Big Bend tunnel was driven through by hand.

From this approach cut 300,000 yards of rock was removed before Haley, Chisholm & Morris could open the east portal at Camp 2.

And so, in the new Big Bend tunnel, where Haley, Chisholm & Morris are driving through the rock beside the old, the negroes sing:

This ol' hammer killed John Henry
This ol' hammer killed John Henry
This ol' hammer killed John Henry
'Twon't kill me
'Twon't kill me

300,000 cubic yards of open cut and 150,000 of tunnel excavation required

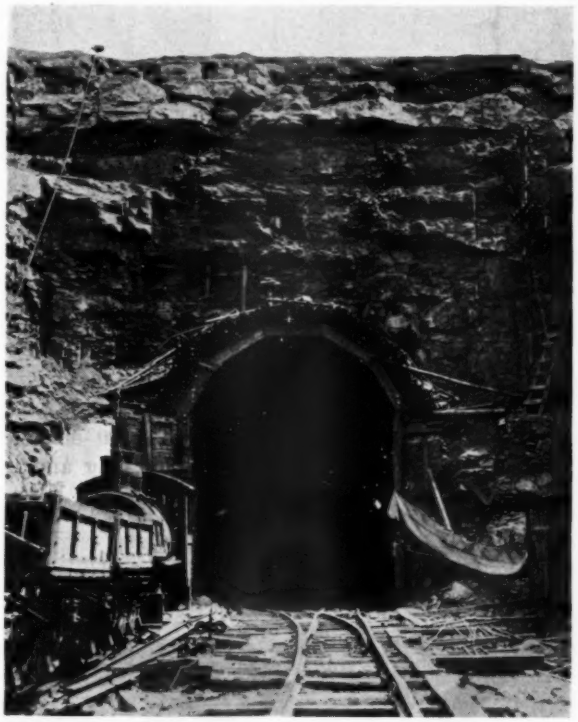
The new Big Bend tunnel, 6200 feet in length, is being built for the Chesapeake & Ohio Railway by Haley, Chisholm and Morris, well-known railroad contractors of Charlottesville, Virginia. It parallels the 1¼-mile old tunnel, built in 1872-73, at a distance of one hundred feet. The old tunnel is no longer large enough to accommodate the largest of present day rolling equipment, being only 15 feet two inches wide and 16 feet ten inches in height from top of rail. The new tunnel inside its concrete lining will be 18 feet wide and 23 feet high from top of rail. When it is finished it will provide double trackage, carrying east-bound traffic while the old tunnel will carry the west-bound. For the time being west-bound traffic using equipment too large for the old tunnel will also be routed through the new tunnel.

The tunnel goes through solid rock which is a mixture of red and gray shale. It is the longest tunnel on the C. and O. and avoids a haul of some 13 miles around the bend in the Green Briar River which it cuts across. It is perfectly straight with a .15 per cent upgrade toward the east end.

Open cut completed—tunnel half through

Work was started by Haley, Chisholm and Morris on August 1st, 1930, and the job is scheduled for completion by July, 1932. The excavation required is 300,000 cubic yards of open cut and 150,000 yards of tunnel. The job also requires 60,000 cubic yards of concrete lining, approximately a million feet of timbering and 5,000,000 pounds of steel.

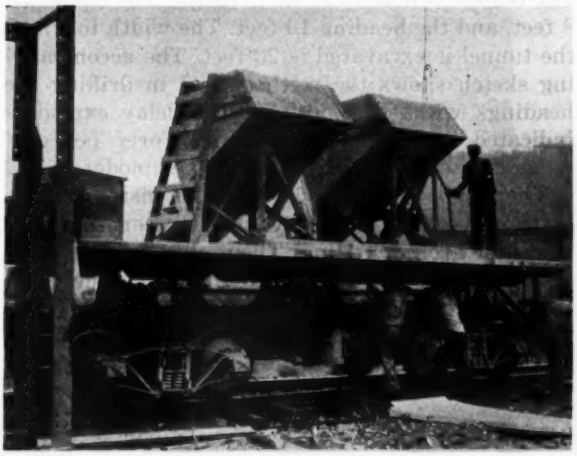
Haley, Chisholm and Morris had realized for a good many years that eventually the C. and O.



The west entrance at Camp 2. On this end narrow gauge railway is used for hauling.

would have to put in an additional tunnel at Big Bend. They had given considerable study to this potential job and when plans and specifications were finally drawn up and bids called for, Haley, Chisholm and Morris, with their twenty and odd years' experience in railroad contracting and their special knowledge of this job, tendered the successful bid. They moved in on the job with the most up-to-date tunnel equipment that present day "Yankee" ingenuity has to offer and with J. R. Morris and L. P. Chisholm supervising the work in person have made excellent progress. At this writing the open-cut work is finished and the tunnel itself is about half completed, there being about three thousand feet to go.

Number One heading, in charge of J. W. Tullah on the east end, is in about 2900 feet. Tunneling on this end was started about six months ahead of the tunneling on the west end as to the east the



These are the bins used to haul the concrete into the tunnel where it is dumped to place.

tunnel opens directly into the face of the cliff while on the west end 250,000 yards, mostly rock, had to be dug from the approach cut before the contractors could open their tunnel cut. Number Two heading was not started until in April, 1931, and is now in 600 feet.

In opening the approach at the west end, Haley, Chisholm and Morris used a Bucyrus-Erie B-2 steamer, a Marion 61 and a Marion 450 loading to Western 16-yard and 20-yard automatic air-dump cars hauled by steam locomotives. Most the material was hauled through the old tunnel to make the approach fill for the new tunnel on the east. A Jordan spreader was used in building this dump.

Tunneling from the west end proved a slower process than that to the east and during the earlier part of the job because the bulk of the excavation including the roof lay in the seam of gray slate which deteriorates rapidly after being exposed to the air. Because of this the timbering here had to be kept immediately behind the working face. On the east end the red rock proved to make an excel-

The Truscon steel lining used in the east end is placed from this scaffold car.

lent roof and the heading could be driven in as rapidly as possible without waiting for lining.

As No. 1 heading is now also in soft material, heading and bench are now carried together on both ends. The top bench is usually blasted first and the heading and bottom bench fired together. The bottom bench is 12 feet in height, the top bench 8 feet, and the heading 10 feet. The width to which the tunnel is excavated is 23 feet. The accompanying sketch shows the method used in drilling the headings with the timing of the delay exploders indicated in the marked circles. Forty per cent Atlas dynamite is used with Atlas exploders.

The finished tunnel is 18 feet wide inside the concrete walls and 25½ feet high from concrete floor to center arch of ceiling. Theoretically, excavation of 21 feet width is required, totaling 22 cubic yards to the foot, but obviously some extra excavation must be made to secure clearance for the rock projections. The actual section obtained by careful

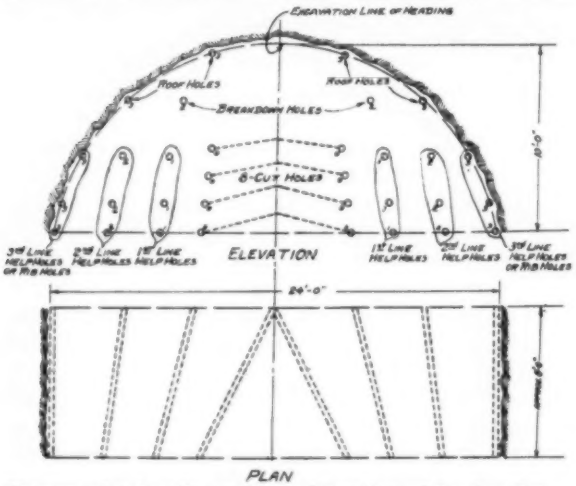


Diagram showing the angles and location of heading holes. The small figures near the holes indicate the timing of delay exploders.

and well-planned shooting in the material dug so far has averaged about 23 feet wide and 30 feet high, giving a 14 per cent overrun of excavated material on account of breakage.

Drilling is handled with Ingersoll-Rand N-75 drills in the heading using Ingersoll-Rand 1¼-inch steel. The compressors (Ingersoll-Rand No. 10 compressors belt driven by 200-h.p. General Electric motors) are located at Camp One. From the compressors an 8-inch line carries the air as far as the tunnel entrance where it divides to two 6-inch lines. One of these carries the air to No. 1 heading, the other runs through the old tunnel and into No. 2 heading. This line is one and one-half miles long.

Dryer for compressed air shows excellent results

An Ingersoll-Rand Aftercooler has been used for the compressed air with excellent results. This drier takes out practically all moisture from the compressed air, and Haley, Chisholm and Morris have experienced no freezing, even at temperatures of 5 degrees below zero (F.). The Aftercooler has also demonstrated its ability to cut down drill cost as the wear on the steel is less with the dry air.

Sharpening of the drills is handled by a shop at Camp One equipped with an Ingersoll-Rand drill sharpener and oil furnace.

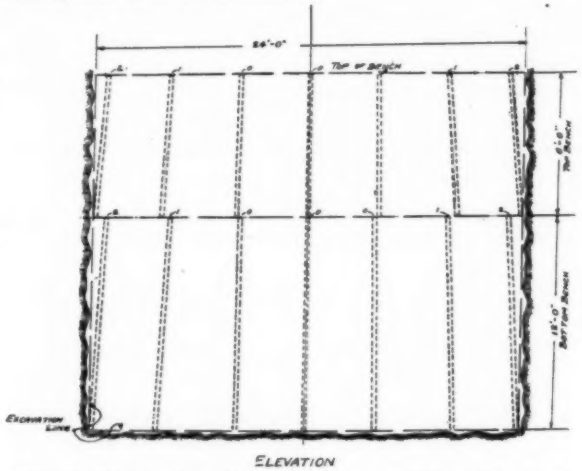


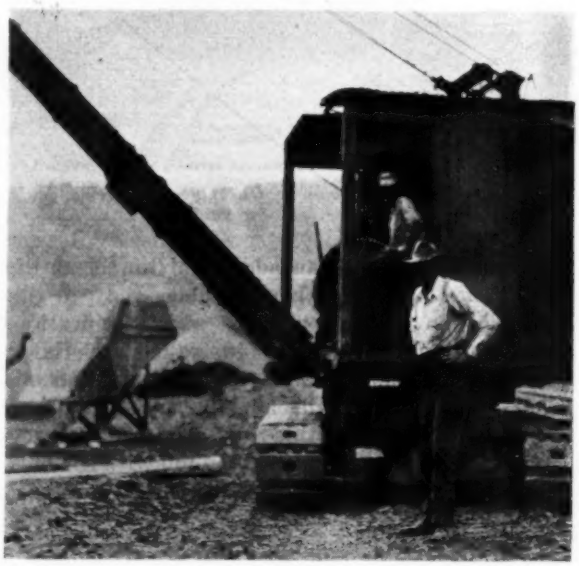
Diagram showing how the bench holes are driven. The heading and bench are advanced eight feet per shot.

Ventilation in the tunnels is taken care of by 20-inch vent tubes carrying air from a Koppers fan at Camp Two and from a Rawson fan at Camp One.

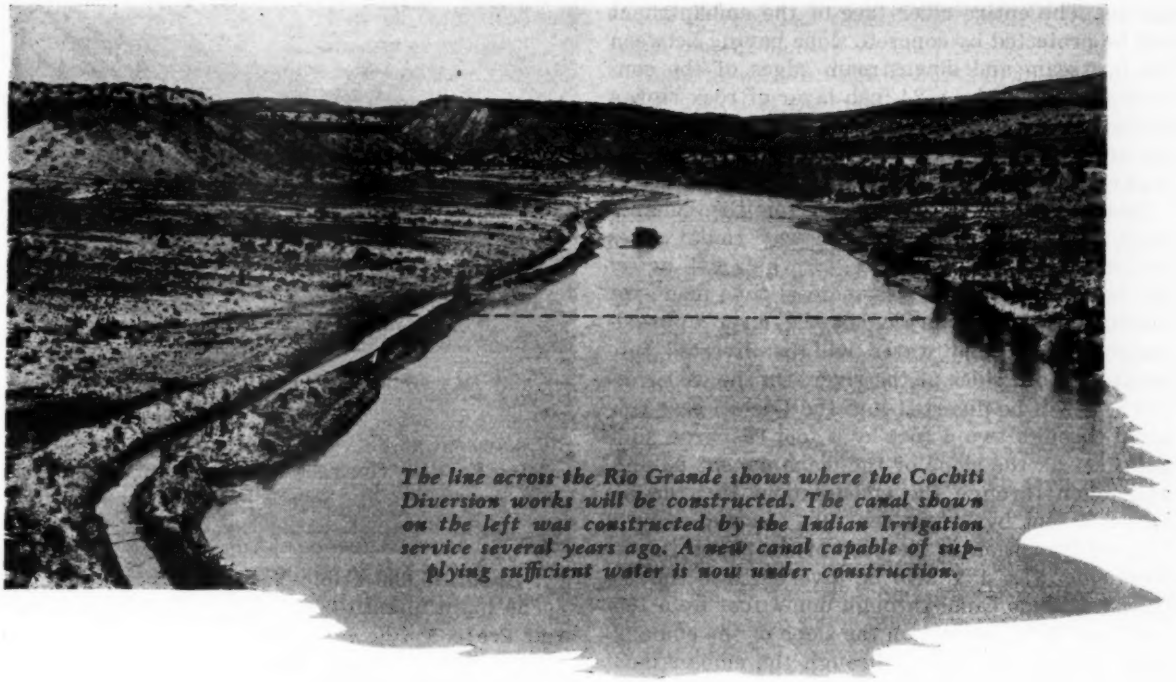
Bucyrus-Erie 1030 electric mucks rock at No. 2

On the west end a Bucyrus-Erie 1030 electric with one-yard dipper handles the mucking and is giving very good service. It loads to 4-yard West-

(Continued on Page 518)



J. R. Morris who deserves much credit for the careful planning and organization responsible for the successful progress of the contractors.



The line across the Rio Grande shows where the Cochiti Diversion works will be constructed. The canal shown on the left was constructed by the Indian Irrigation service several years ago. A new canal capable of supplying sufficient water is now under construction.

CONTRACT LET for first unit of Middle Rio Grande's irrigation system . . Cochiti Diversion Works

Middle Rio Grande Conservancy District 2-yard Diesel dragline sets excellent output record on canal work.

By J. D. Holmes

THE TOBIN Construction Company was low bidder on the Cochiti Diversion Works let by the Middle Rio Grande Conservancy District September 8th. This company's bid of $39,507.10 was accepted by the Conservancy District from the twelve bids received. According to the contract work will begin October 1st and is to be completed by April 1, 1932.

This is the first contract let by the Conservancy District in its flood control, drainage and irrigation work in the Middle Rio Grande valley. This diversion weir is the first unit of the irrigation system. Work up to now on this $10,000,000 project has been flood control and drainage.

The diversion works will be across the Rio Grande about 50 miles north of Albuquerque on lands owned by the Cochiti Indian pueblo. As Indians are wards of the government an appropriation has been made sufficient to take care of the work the Conservancy District is doing on the six Indian pueblos within the district.

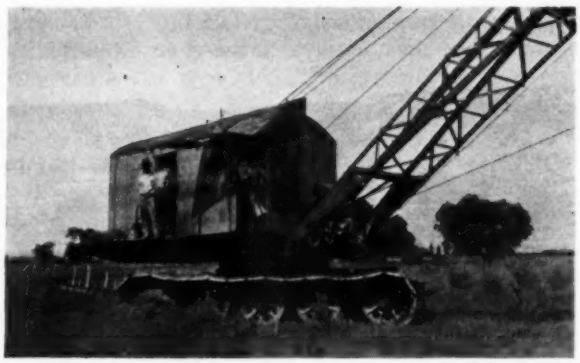
The weir will be a concrete ogee section 8 feet high and 235 feet long, with upstream and downstream concrete aprons. The stream bed below the down stream apron will be protected against erosion by a layer of rock riprap, approximately 20 feet wide and 3 feet thick. At each end of the weir will be a sluiceway with a radial gate 12 feet wide and 8 feet high, operated by a double drum radial gate hoist.

An embankment with a 20 foot crown and 1½ to 1 side slopes will be constructed on each side of the river to a height of 21 feet above the concrete

aprons. The entire river face of the embankment will be protected by concrete slope paving between the upstream and downstream edges of the concrete apron, and by a 24-inch layer of rock riprap extending 20 feet downstream from the slope paving and extending upstream to the end of the embankment.

Operating bridges will extend from the embankment crown out over the sluiceway radial gates one on each side of the river, on which will be set the radial gate hoists. Provision is thus made for raising the water surface in the river approximately 8 feet, and water will be diverted into canals on both sides of the river. On the east side, 175 s. f. will be diverted into the Cochiti east side canal through two 4 foot by 5 foot cast iron slide gates set on the slope of the embankment paving, and taken through the embankment in a double barrel 4 foot by 4 foot concrete box ending in a warped transition at the head of the canal. On the west side, 87.5 s. f. will be diverted into the Cochiti west side canal through one 4 foot by 5 foot cast iron slide gate set on the slope of the embankment paving and taken through the embankment in a 4 foot by 4 foot concrete box ending in a warped transition at the head of the canal. The cast iron slide gates will be operated by pedestal hand hoists set as the ends of the embankment crown.

The weir is planned to pass 40,000 s. f. of water, however, at his point the greatest amount ever passed during flood stage was approximately 28,000 s. f. Stream flow records of the Rio Grande were taken from the State Engineer's record covering a period of 35 years and added to the specifications so that contractors might know the previous conditions of the river at the time of year they might be constructing this weir.

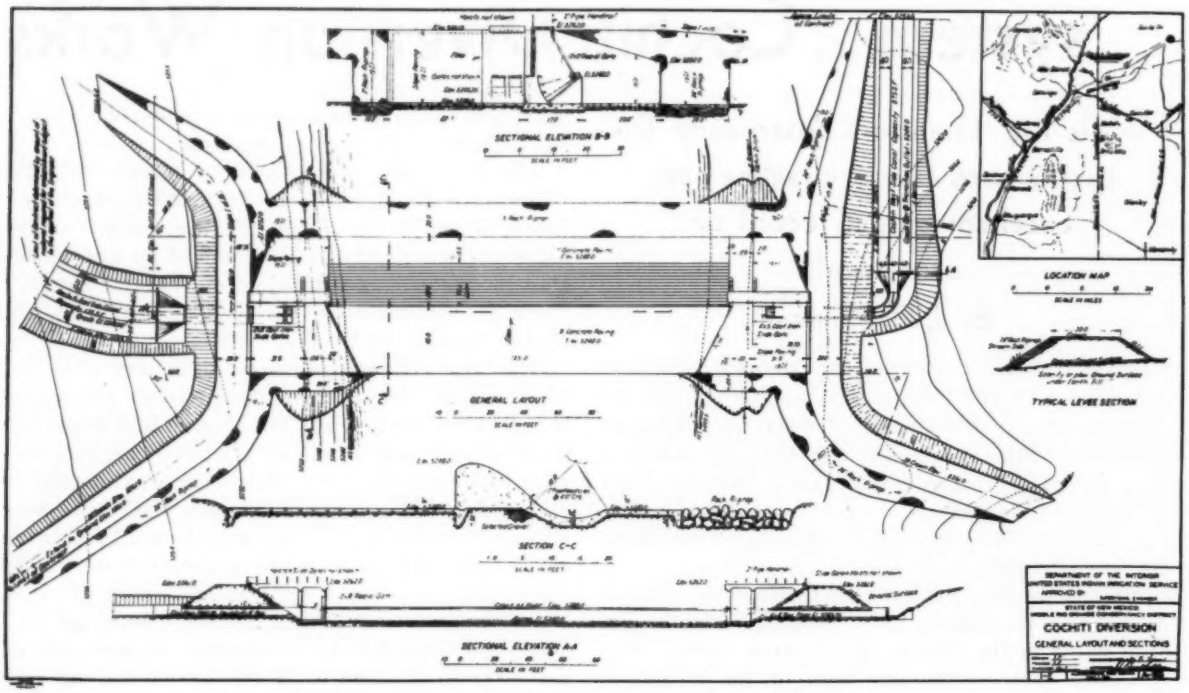


Bill Snyder's machine which was expected to make a record during September of at least 1500 cubic yards per eight hours.

About 16,000 Cubic Yards of Excavation

The main quantities in the construction of the weir are:

Excavation, Class 1—wet	3,000 cu. yds.
Excavation, Class 2—dry	3,350 " "
Levee embankment	6,700 " "
Backfill, puddled or compacted	500 " "
Backfill, selected gravel	36 " "
Rock riprap	1,350 " "
Concrete, Class A—unformed	1,025 " "
Concrete, Class B—formed	216 " "
Concrete, O. G. Weir—formed	731 " "
Reinforcing steel	103,466 pounds
Cement	3,000 barrels



General layout and sections of the Cochiti Diversion Works.

The dam site is located 11 miles from the main line of the A. T. & S. F. railroad and at an altitude of 5,200 feet. A splendid highway leads from the railroad station at Domingo to the dam site and hauling may be done at a minimum expense. Ideal conditions exist at the site for the construction camp.

A 50-B is doing its part toward bringing irrigation to the Cochiti Indians. The above machine is working in a stretch of bosque land.

The contractor if he so desires, may rent a dragline excavator from the Conservancy District for the excavating work. The main irrigation laterals are now being excavated by the District and will probably be completed before the next irrigation season.

A Bucyrus-Erie 50-B is doing its part in the excavation of these canals. Cochiti Indians are used as oilers. Indian governors of some of the pueblos through which the Conservancy project runs refuse to let any of their subjects work on anything as modern as a Bucyrus-Erie. They refuse to take part in this modern method of irrigation and evidently believe they would make their Indian gods angry should they become members of a dragline crew.

The Cochiti Indian boys are quite modern for Indians and are very good workers. Most of them wish to learn all they can about the Atlas Imperial Diesel engine with the hope that some day they may become "skinners".

Average 1670 Yards per 8 Hours With 2-yard Bucyrus-Erie Diesel

If these Indian boys can ever make as good operators as Bill Snyder and Bernard Kelly they'll be going some. Messrs. Snyder and Kelly during the month of August worked 42 shifts on one of the Bucyrus-Erie 50-B's for a total of 70,146 cubic yards, an average of 1670 cubic yards per eight-hour shift. We claim this is some "dirt digging" in any man's country.

A two-yard bucket was used and it was also necessary to use the pontoons in soft going.

Edward Odle and George Hart were the oilers on this machine and are proud of this record—the best yet made on the Conservancy District—as are their operators.

Bill Snyder has consistently been a leader for earth moving honors on the project.

Right-of-way through the Indian Pueblo for the construction of the weir is furnished the contractor by the Conservancy District. In letting the contract for the weir the contractor agreed to work Indians on all classes of work which they are capable of doing. The contractor assumed this stipulation in the contract the same as the Conservancy District did in contracting with the government to do the work on Indian lands. The contractor is, however, glad to carry out this agreement as the Indians are steady workers. An eight-hour day is worked and Indians are paid the same rate as other workers of the same class.

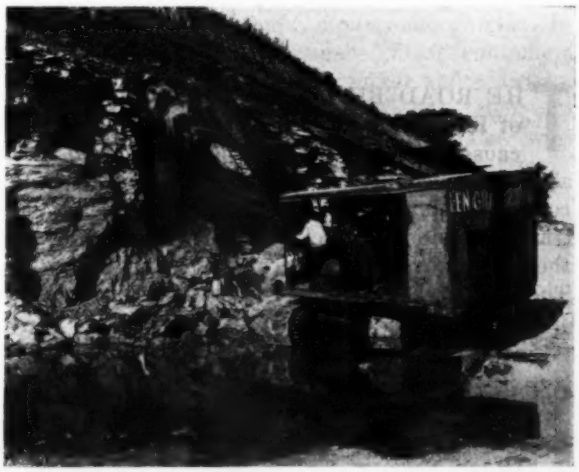
To Be Finished April 1, 1932

Payment of the work is made on monthly estimates, these estimates being made by J. L. Burkholder, Chief Engineer of the Conservancy District. The last and final payment will be made after the Board of Commissioners of the District has accepted the job upon the recommendation of the Chief Engineer.

According to the contract the job must be completed by April 1, 1932. In case of default in completing the work the contractor has agreed to pay the Conservancy District $100.00 per day for every day of delay.

The Conservancy District has three more diversion weirs and a storage dam to build. The contract for the construction of these structures will probably be let during the early part of 1932.

Gas Air Handles Solid Rock



IN JUNE we carried a story entitled "Moving 200,000 yards on Missouri 66" which told how Contractor Len Gray built a new six mile grade for the old Watson road about thirteen miles southwest of St. Louis. The above picture came in after the story was published and shows one of the rock cuts that prooved the metal of Mr. Gray's Bucyrus-Erie Gas+Air. The contract included 60,000 cubic yards of rock.

Modern Roads Replace Creek-Bottom Trails Through Kentucky Hills

Hills that make the beauty of this Kentucky landscape make heavy cuts for the road builder.

Southeastern Construction Company playing prominent part in Kentucky Highway Program.

THE ROAD BUILDING problem in the hills of Kentucky is a particularly difficult one because of the heavy excavation and considerable rock encountered. In many sections the only roads back into the hills are the old creek bottom trails suitable for travel with horse and buggy and then only through the dry seasons of the year. These creek bottoms down the valleys are cut by the water down into the rock usually about the width of a buggy. During most of the summer and fall they are dry and very little work makes them passable for the settlers in the hill sections. In the spring and during heavy rains they are, of course, impassable.

Ingersoll-Rand Compressor and Hammer at work on the rock.

Through the most prosperous "Blue Grass" and tobacco raising parts of the state, good roads were more necessary and easier to build so the hill people have had to wait content with their horse and buggies and the creek bottom trails.

Recently, however, a more ambitious road program has been undertaken in Kentucky and the Southeastern Construction Company, well known contractors of Eminence, Kentucky, have had an active part in the considerable amount of heavy grading work involved.

Caterpillar and 8-yard Athey demonstrate the advantage of the 3-way dump.

Most of this section of highway must be notched into the sides of the hills.

One of the outstanding projects on Kentucky's good roads program is the new highway through the hills and valleys south of the Ohio from Louisville to Covington (the latter being just across the river from Cincinnati). This beautiful new highway, Kentucky No. 10, 96 miles long, is expected to be completed through to Covington at an early date.

11.1 Miles Total 250,000 Cubic Yards

Last year Southeastern Construction Company completed grading 4.6 miles west of Prestonville on this highway involving 110,000 cubic yards of excavation.

This last winter and spring their Bucyrus-Erie Gas+Airs cut through another 6.5 miles to Bedford and Carrollton along the Little Kentucky River. On this latter contract there was 140,000 cubic yards of excavation, 30,000 of it solid rock.

One 300 foot cut to maximum depth of 53 feet totaled 15,000 cubic yards.

Excavating was handled with two Bucyrus-Erie Gas+Air shovels loading to three Athey 8-yard 3-way dump wagons, two Euclid 8-yard bottom dumps, and two Euclid 6-yard bottom dumps. Four Caterpillar Sixties and two Caterpillar Thirties handled the hauling. In addition International, Ford and Willys-Knight trucks furnished auxiliary hauling service.

Air for drilling the limestone rock with Ingersoll-Rand Jackhamers was furnised by two Ingersoll-Rand 5½x5 compressors. There was also a gas well drill used for drilling in some of the heavy rock cuts. Gold Medal 40% dynamite was used for blasting.

The work was supervised by J. R. Gregg, foreman, and operators H. M. Stinson and Bob Hartman pulled the levers of the Gas+Air machines.

Output of these machines ran as high as 1200 cubic yards per shift of ten hours.

Numerous Bridges and Culverts Built

The road winds through the valley of the Little Kentucky and because it crosses numerous small creeks coming down out of the gullies leading back into the hills, many bridges and culverts were required. These were built, under subcontract, by Tye & Wells also of Eminence. Their equipment consisted of a Jaeger one bag mixer and a Rawson Roll Mixer, with one International truck for handling forms and cements. Aggregates were available close by the bridge and culverts sites.

One of the Bucyrus-Erie GA-2 shovels loading in dirt and rock cut. Southeastern Construction Company recently purchased two new Gas+Airs to add to their digging equipment.

The grading work on this job in Timble and Carroll counties was started on November 1st, 1930 and completed June 1st, 1931.

Paving on both these sections is now being poured by contractors Gerrell-Kirckpatrick- Bonnow. A 20-foot concrete slab 9 inches thick is being laid on the 30-foot wide grade.

A second job on Number 10 near Ghent was under way at the same time. This 6.6 mile job was in lighter grading and totaled 105,000 cubic yards. Here the Southeastern Construction Company used another Bucyrus-Erie Gas+Air, Caterpillar-drawn Euclids, and some mule gangs. Foreman James Vance had charge of this work with Francis Wilkerson operating the Gas+Air. This job was started November 1st, 1930 and completed June 1st, 1931.

The concrete culvert and bridge work was done by subcontractors Baker & Tye of Eminence. Their

One of the fills.

equipment consists of two Jaeger Mixers, four Jaeger water pumps, Mack, International and Ford trucks.

The Southeastern Construction Company also graded another section of eight miles of this route in Timble County, back in 1926 being the first piece of work done toward opening up the new highway from Covington to Louisville. The work was done with two Bucyrus-Erie steam shovels and mule dump wagons.

The second section done by this company was 8.5 miles in Oldham County. The work was done

Sub-contractors Tye & Wells putting in center pier forms for one of the many small bridges.

by one Bucyrus-Erie steam and one Bucyrus-Erie Gas+Air with mule-drawn dump wagons and Caterpillar tractors in 1927 and 1928.

Jobs which the Southeastern Construction Company have underway at present include, 2.2 miles in Carroll County also on Kentucky 10. This is being handled by a Bucyrus-Erie Gas+Air doing both excavating work on roadway and bridge and pile driving work.

They are also grading 15.5 miles in Owen County on the Owenton-Frankfort road. Here they are using three Bucyrus-Erie Gas+Airs, one Bucyrus-Erie steamer, nine Caterpillar tractors, three Athey 8-yard dump wagons, two Euclid 8-yard dump wagons, two Euclid 6-yard wagons, two Ingersoll-Rand compressors (5½x5), one well drill, three graders, four trucks (Ford, Chevrolet, Indiana and Hug) twenty-four wheel scrapers, four Euclid 1¼-yard tractor scrapers, two Killifer Rippers.

Officers of the Southeastern Construction Company are: Walter Tye, President, H. S. Tye, Vice-President and Ola M. Tye, Secretary and Treasurer.

Rats!

ONE of our contractor friends recently sent in, what he claims is a sure method of cleaning out the rats around the mess hall or the garage where the kritters get liquored up on the truck or tractor's supply of gasoline. "Fill galvanized tins with common or garden variety moonshine and set them around the place where they will be handy for the rats," says he. "We tried the prescription recently and the rats first start jumping backward and turning somersaults. After the second drink they turn ugly, fight and tear each other limb from limb. The morning after our experiment there was only one left. The timekeeper, who had gone out for a tour of inspection slammed the door just in time as this fellow chased him into the office. It then wandered off into the hills, looking for mountain lions."

FIELD NOTES

Some Suggestions for Making Your Job Safe

HERE are some suggestions offered by the *National Safety Council*, Chicago, which may be of value in organizing your job to prevent accidents:

Superintendents and foremen should feel their responsibility for preventing accidents. It is their duty to see that tools, equipment, and materials used are in good condition.

Use judgment in assigning men to do certain work and be sure they are capable.

Call attention of men to any dangerous condition so they can be on lookout.

Post conspicuous signs warning the public to keep out.

Post danger signs where necessary. Station watchmen where necessary.

See that accident reports are properly filled out.

Instruct your men to report all accidents no matter how trivial. Minor injuries neglected produce most of the infection cases.

See that equipment is in first class working condition before being sent from yard to job, or from one job to another. Inspect frequently while on job. Have all gears, belts, and other moving parts well guarded.

Blasting Mats Used in City Operations

EXTREME precautions are taken during blasting operations in cities where explosives are required for subway work and for excavating through rock in making deep trenches for sewers or other construction.

One of the adjuncts to blasting in cities is the so-called blasting mat which consists of woven cable wire three-quarters of an inch in diameter, fabricated to provide mats of from 18 to 20 feet square. These mats are placed in position over the rock to be blasted, after the holes have been drilled and loaded and are ready for the shooting. Because of their weight, it is necessary to use small derricks when lowering or raising the mats.

Another practice widely followed in underground blasting in cities is the use of tamping bags. These are paper containers of the approximate diameter of dynamite cartridges and are filled with sand.

The bags are loaded in the holes on top of the dynamite. They are especially adapted to use when loading upper holes, as they keep the tamping intact. Not only is loading expedited by the use of tamping bags, but better results are secured because the added weight of the sand helps in properly confiing the force of the explosions.

—*Explosives Progress.*

The Spelling of Mesabi

EVERY once in a while the question of how properly to spell the name Mesabi is raised. When publication of Skillings' Mining Review was begun more than 19 years ago the style at first adopted was Mesaba. The late Horace V. Winchell, noting this, addressed a letter to the editor on the subject, which was published in these columns March 20th, 1920. This letter is again reproduced as it is believed that it will prove of interest. Mr. Winchell said:

"The name of Mesabi is used by the Ojibway Indians in referring to a fabulous giant, who was supposed to make the Mesabi range his dwelling place, and by whom the various boulders which are so numerous in the vicinity were supposed to have been used as ammunition in killing game.

"The first rendition of this name that I have come across was on Nicollet's map of 1843. On this map the name is spelled Missabay. A portion of this map was later reproduced in a report by Colonel Whittlesey, and the spelling of this name was changed to Mesabi, and this spelling is used in all of the later reports of the United States and of the Minnesota Geological Survey.

"When the Duluth & Iron Range Rail Road was constructed from Agate Bay to Soudan station, a station was established near where this road crosses the range, and is called Messaba. When Leonidas and Alfred Merritt and Donald Grant and the Chase brothers of Faribault, Minnesota, built their railroad from Iron Junction to the range they spelled the name Missabe.

"Some 28 years ago (now 39) the National Board of Geographic names, after consideration of these and other spellings, adopted officially the spelling Mesabi and this orthography is the only one officially recognized by the United States government for use in all its publications. I think that it will be found that this version of the name is correct."

Reprinted from Skillings' Mining Review, August 15, 1931, by special permission.

Home Made Subgrader

HERE'S a home made subgrader, rigged up byA. E. Bounsall of Kenosha, Wisconsin, to save cost of hand finishing on his paving work at Stevens Point, Wisconsin. The device consists of a plank (about 2-inches by 12-inches) with runners on the ends and weighted down with sand bags. It is hitched behind Mr. Bounsall's Bucyrus-Erie 1-yard shovel. The 1035, with operator Phil Adler up, digs closely to grade and as it moves up the subgrader dragged along behind smooths the surface ready for the paving. Working in the sandy loam encountered on this job, the device does excellent work.

Maybe there's reason!

Adam: Eve! You've gone and put my dress suit in the salad again.

The Excavating Engineer

A Monthly Publication Devoted to Excavating and Allied Subjects

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The Business Situation

BUSINESS conditions have changed very little during the past month. Today we face the same problems that we did a month ago and today Domestic business conditions are on the same fundamentally sound basis.

Of prime importance and yet easily overlooked in the maze of comment being made today, is the fact that consumer goods demand has held up very satisfactorily during the past month. In fact, freight car loadings on merchandise shipped in less than car load lots increased from 214,627 cars in the week of August 29th to 218,231 for the week of September 5th. Increasing demand for consumer goods has always led the way out of previous major depressions. This increased demand starts a busines activity that paves the way for an increased demand for producer goods and which leads in turn to increased business activity all along the line.

"With contracts reaching a total valuation of $42,604,000 for the week ending September 19th, heavy construction and engineering operations announced throughout the country staged a strong recovery from the previous week's low point, when lettings amounted to $27,759,000, according to Engineering News-Record. In the like week last year, awards were valued at $65,169,000.

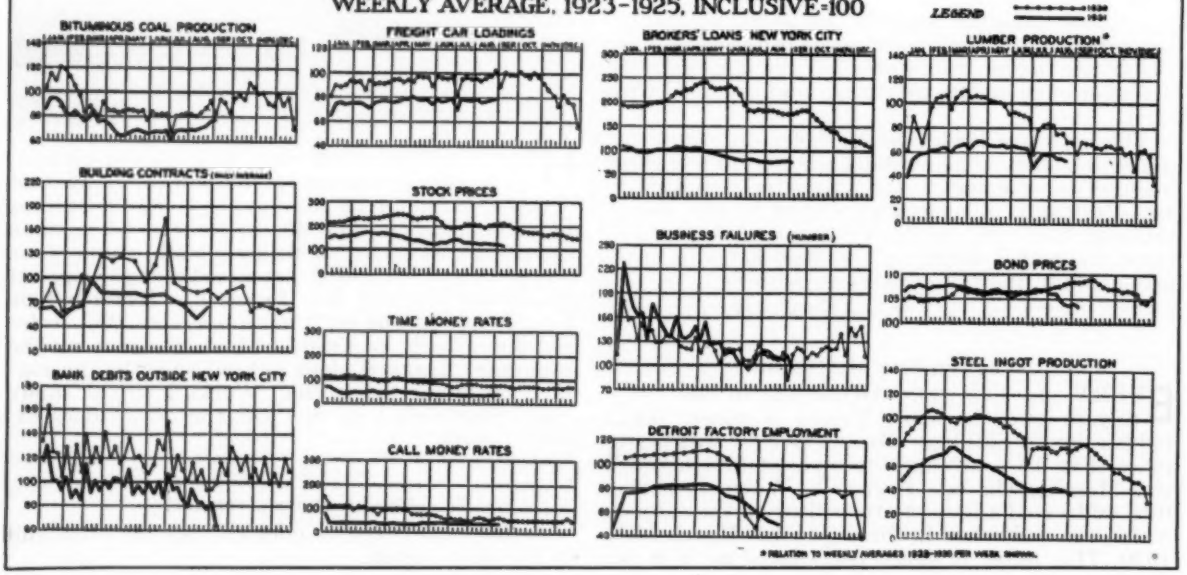
"Industrial building awards, representing an investment of $2,595,000, showed the only weekly and yearly gain.

"The cumulative value of contracts awarded in the country's engineering field since January 1st amounts to $1,926,808,000, against $2,523,926,000 in the corresponding period last year."

There are three influences that are very definitely holding back the increase of business activity. The Cleveland Trust Company in their business bulletin for September 15th state these with exceptional clearness.

"The first of these is the combination of fiscal troubles abroad, that have latterly been acute in Germany and England, and which have been temporarily alleviated but not cured, by suddenly devised emergency measures. These difficulties are caused by unbalanced governmental budgets, and we shall do well to remember that in this country

WEEKLY BUSINESS INDICATORS



also the time is not far distant when we must bring our own governmental expenditures down to the level of our income.

"The second of our three problems lies in the fact that banks here and abroad are still restricting credit rather than expanding it. They are insuring their own safety and security by accumulating liquid resources on a scale seldom if ever reached previously. This is good banking for the individual institution, and it safeguards the deposits, but it does not aid business recovery. It does not stimulate new business initiative, or encourage enterprise. Probably it is inevitable that the policy of safety first should be followed while commodity price weakness continues, but the condition constitutes one of the real difficulties in the general situation.

"The third of the key logs is the plight of the railroads which now have revenues so seriously inadequate that investors are turning away from their securities. These securities constitute the largest single grouped aggregation of American capital. If the rail revenues could be increased, banking confidence in the future would be greatly restored. If that should happen here, the fiscal problems abroad would loom up far less threateningly, for international lending would be facilitated. If that happened prices would stop falling. Our railroad problem is both important and pressing."

Stop the Landslide!

By Howard B. Rose

The Excavating Engineer agrees heartily and takes pleasure in reprinting the following article from Western Highway Builder.

The construction equipment industry is operating on faulty ground. The editors and publishers of Western Highways Builder believe that some immediate means must be discovered to prevent impending disaster. The accompanying article presents the stand of this paper in this important matter.

LOOKING ahead at the construction machinery business of Southern California any observer, basing his judgments on past performance and future possibilities would have to be an incurable pessimist if he could not see a period covering the next few years when the volume of construction machinery which will be sold in this region will be enormous.

The construction of the aqueduct which will bring Colorado river water to the southern coastal plain cities; the building of the all-American canal; flood control projects which are imperative; harbor development; street improvement programs in a hundred cities; county and State road work and a volume of private building are bound to produce sales of contractors' equipment which will surpass anything ever seen in this territory.

When the buying of equipment in large volume will begin, cannot be predicted with accuracy, but it is the opinion of the writer that it will begin soon. Never before have we seen so much obsolete equipment in use. Contractors as well as governmental agencies, are wearing out their junk in a frantic—and often misguided—effort to make costs meet income on their various projects. But the equipment is wearing out and when the point of complete and general breakdown is reached, the buying of replacement units will begin.

It is not our intention here to paint a flowery picture of the future, and we have only indicted the above sunshiny preface that we may the more darkly paint a picture of disintegration which we believe is facing the construction equipment industry. For in spite of the big volume of business which is bound to come to equipment distributors, they face a profitless era. Assuming that the dealers in heavy duty equipment continue with the policies largely practiced today, it appears to me that very few of the houses on "the row" will be in business in five years.

During the last year and a half we have witnessed a terrible scramble for business. Prices have been slashed, whittled and chopped. Buyers have been granted terms which are entirely out of line with sound business policy. Trade-in equipment has been taken at allowances which either netted the trader a staggering loss or consigned the unit traded for to the junk pile to rust and the loss of even more money. And worst of all has come along the practice of renting new equipment. Oftentimes these rentals were at such a low figure that the distributor was not reimbursed for depreciation.

It is an impossible condition. It is insanity. Business jealousy has been a factor. Dealer "A" underbids Dealer "B" on a deal. Dealer "B" makes up his mind to get even and when the next sale comes up he sharpens his pencil and takes Dealer "A" for a ride. Dealer "A" knows that Dealer "B" lost money, but he's sore about the ride and comes back with some real punishment on the next bout, and so it goes until they've both lost a lot of money.

Another factor is the desire of the dealer to hold his accounts. His principals are expecting business. They have good equipment and they know it should sell. Sometimes sales managers become quite aggressive and there are drives for business in which the distributor is the drivee. The

(Continued on Page 516)

Putting in Half Million Dollar Sewer Job in Knoxville

THE CITY OF KNOXVILLE, Tennessee, in March, 1930, let contracts for approximately four miles of trunk line sewer and ten miles of laterals, consisting approximately one-half million dollars.

On April 19, 1930, the E. H. Reeder Construction Company of Dallas, Texas, started work on the trunk line sewer. This consists of four miles of 48 inch down to 30 inch line. They are at this writing (August) about eighty per cent finished. Some idea of the difficulties they have encountered may be gathered from the fact that more than fifty per-cent of the excavation has been through solid rock, and they have crossed First Creek which parallels most of the job, twenty-eight times.

The concrete pipe used on this job is of a special design worked out by the City of Knoxville Engineering Department. The pipe is reinforced by steel and produced by the Shearman Concrete Pipe Company of Knoxville on one of their sixty-inch ball-bearing, concrete pipe machines. This machine produces as high as 6,000 pound concrete pipes, all pipe passing a 1600-D first crack specification.

The equipment consists of two Buckeye backfiller-crane combination, and one each Keystone, Thew and General excavators. Ingersoll-Rand drill sharpener equipment, eight Ingersoll-Rand portable compressors, with Ingersoll-Rand, Chicago Pneumatic and Gardener-Denver drills. One Homelite Self-Priming Centrifugal 4-inch pump with several Novo and Domestic Diaphram pumps are used.

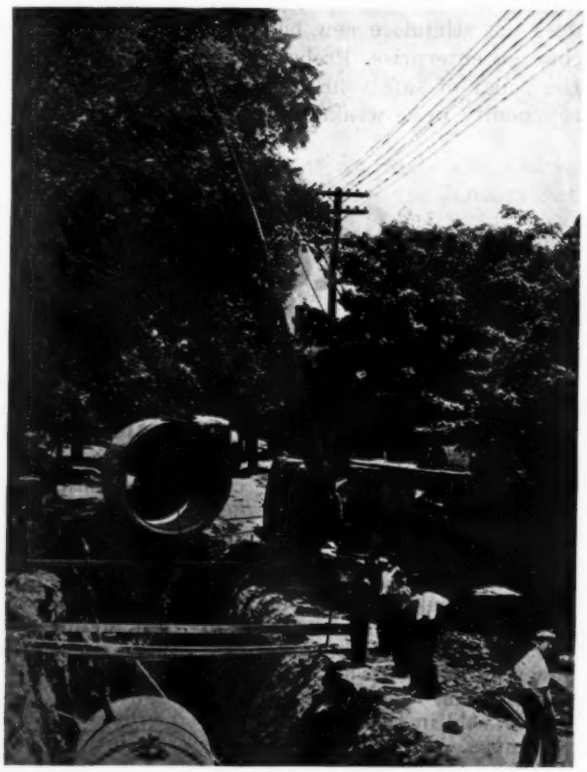
City Inspector Arthur R. Griffin (in foreground) and Foreman J. H. Smith (on bank) watch operator J. E. Lee place the 48-inch concrete pipe. Right—36-inch Shearman concrete pipe laid through solid rock excavation.

The work is in charge of David Leach, with Foremen J. H. Smith, J. T. Diffley and Cornelius P. Lynch. Leslie C. Hunter is Office Manager.

Work on the laterals is being done by Lee A. Gridley Construction Company of Knoxville; Emory Construction Company, Knoxville, and G. Marvin Ferris, Knoxville.

Placing 518,000 Pounds of Concrete Pipe

INSTALLING a relief sewer on South B Street at Richmond, Indiana, Iliff Brothers, subcontracting for the Dehner, Inc., had work consisting of excavating, laying and backfilling for concrete tile 90 inches in diameter. Sections were five feet long and weighed seven tons each. A Bucyrus-Erie Gas+Air and a Northwest of the same size handled the excavating and placing. As the Gas+Air was best able to raise and lower the seven-ton pipe smoothly and under positive control, especially important because this was in a downtown section, this machine was assigned the task of placing the pipe. The Gas+Air handled the pipe at a radius of 18 feet in a very satisfactory manner using the brake proper as well as making use of the compressor as an air cushioned brake in lowering for the final fit. Iliff Brothers obtained the excellent record of laying 37 tile per day in prepared excavation.



The smooth and positive control of the Gas+Air was found to be of distinct advantage in placing the seven-ton sections of concrete pipe.

He placed his arm around her waist,
And on her lips a kiss;
Then sighed, " 'Tis many a draught I've had,
But not from a mug like this."

EQUIPMENT YOU OUGHT TO KNOW ABOUT

New Haiss Loader

THE George Haiss Manufacturing Company of New York have recently introduced their new giant Model 80 leader. Claimed to be the heaviest, most powerful and strongest loader ever built, the Model 80 is said by the manufacturer to have demonstrated an average capacity in excess of 3 cubic yards per minute, even under difficult conditions.

A large New York City operator of sand and gravel yards, is reported to have made a loading time of 3½ minutes, putting up 15 consecutive runs of 12 cubic yard loads of crushed stone.

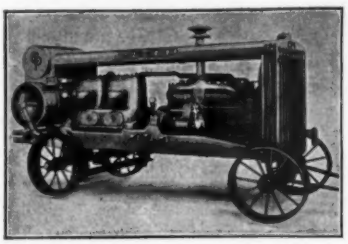
The new Haiss 80 is equipped with a 60 H.P 6-cylinder engine with intake air cleaner, oil filter, gasoline strainer and inbuilt throttling governor. It has a fully enclosed transmission, all gears running in oil. It has the patented Haiss 3 feet per minute crowding speed and the Haiss patented revolving propellor feeding device. The buckets, measuring 22 x 12 x 10 inches are toothed for easier digging. The bucket elevator is interchangable with a flight-conveyor snow boom for winter snow loading.

There are only six controls in all. Each motion requires only one hand-movement. A skilled operator is not required; in fact, a few hours experience is said to assure fullest efficiency.

If you will write the *George Haiss Manufacturing Company, Inc.*, at *141st Street at Park Avenue, New York*, they will be happy to send you complete information.

360 Cubic Foot Portable Compressor

THE NEW compressor of 360 cubic foot per minute capacity, recently added to the dependable line of Chicago Pneumatic portable compressors, permits the use of an additional number of rock drills, pavement breakers, clay diggers, backfill tampers and similar pneumatic tools, a feature that increases the money making and money saving possibilities of such a machine.



The outstanding features of design of this new compressor, are, according to the manufacturer: total lack of vibration; full force feed lubrication of compressor and engine; six-cylinder Hercules engine; direct drive through quick-detachable flexible coupling; counterweights forged integral with compressor crankshaft; full-floating piston pins in compressor; cylinders cast separately from crank-case; large compressor crank-case doors, affording complete accessibility to bearings; sectionalized radiator with steel protection bars and fan guard; one-piece cast-steel deck.

The compressor can be mounted on steel wheels, or wide flanged solid rubber tired wheels with roller bearings. It can also be furnished on skids for semi-portable use or for motor truck mounting. It is also available mounted on a CP trailer, equipped with springs, wide flanged solid-tired wheels, Timken roller bearings, Alemite lubricating system, equipment box and internal drum brakes. Bulletin No. 755 completely describing this new addition to the CP line will be sent to any interested reader. Write *Chicago Pneumatic Tool Company*, 6 East 44th Street, New York, N. Y., mentioning *The Excavating Engineer*.

New Hydraulic Dump Body

HERCULES PRODUCTS, INC., of Evansville, Indiana, who for many years have manufactured dump bodies and other all-steel bodies for trucks, announce a line of "Hercules Better Dump Bodies" for one to three ton chassis for which are claimed many exclusive outstanding features. These include unusual low loading height because of a

sub-frame that is only 12 inches overall; dump controls entirely from the cab by means of two levers which stop, hold, lower or raise from any position while truck is standing still or in motion; three-point suspension, improved by flexible arrangement of rollers, shaft and levers making it impossible to cramp the body at any angle; smooth dumping regardless of unevenness of ground at an angle up to 55 degrees which is reached in five to seven seconds with full load; oil pressure perfectly uniform from start of the lift to final dumping angle with remarkable smooth action. The mounting of the Hercules Body is simple and easy; hoist and body are shipped assembled ready to mount on chassis and includes power take-off—it is only necessary to apply four U bolts, hook-up power take-off, connect levers and the job is mounted. For further information write, the *Hercules Products Inc., at Evansville, Indiana*, or the *Hercules Products, Ltd., East Windsor, Ontario, Canada*, mentioning The Excavating Engineer.

SHOTS FROM THE FIRING LINE

New San Gabriel Plans Approved

RECENTLY announced were revised plans for dams on the San Gabriel River to salvage 62,000 acre feet of flood water annually and furnish complete flood control protection for the region.

It was originally planned to build on the San Gabriel River a dam which was to be the largest concrete dam in the world. Twenty-five million dollars worth of bonds were sold covering this dam and construction had been started when the project had to be abandoned because the site was found to be impractical.

A recent decision of the California Supreme Court released for disbursement in this flood control district the remainder of the bond issue money which now totals 22,200,000. The new plan outlined by E. C. Eaton, Chief Engineer of the Los Angeles County Flood Control District, calls for three dams. Flood control dam No. 1 will be located 2.4 miles below the forks of the river and backs up the water for 2.5 miles. This dam will be all rock filled construction and between two and three hundred feet high. Control dam No. 2 will be located nine miles to the west of the forks and will back up the water 3.5 miles. This dam will be all concrete construction and approximately 250 feet high. Control dam No. 3 located four miles to the east of the forks will back up the water about two miles.

The estimated cost of the project will be $21,000,000 and about 2,000 men will be employed. The labor expenditure totals approximately $11,000,000.

Preliminary details have already been completely worked out and complete plans and specifications are expected to be in readiness shortly.

Well Known Western Contracting Firms Low on Canal Zone Dam Project

W. E. CALLAHAN Construction Company of St. Louis, Missouri, together with Peterson, Shirely and Gunther of Omaha were low bidders for the construction of Madden Dam on the Panama Canal. Among other items this project includes 685,000 cubic yards of all classes of excavation; 646,000 cubic yards of rock fills and embankments; 518,000 cubic yards of concrete.

Six Companies' Head Dies

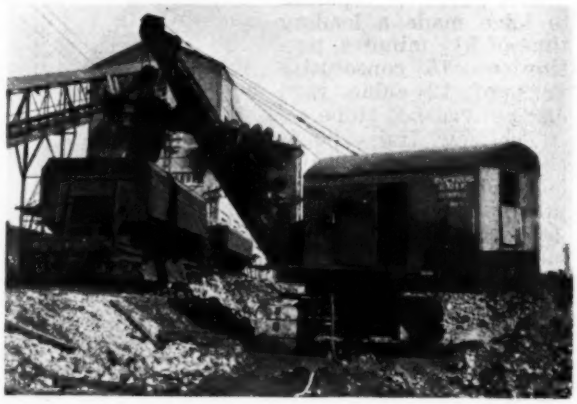
ON SUNDAY, September 13, death, following a long illness took William H. Wattis, 72, President of Six Companies, Incorporated, holders of the world's largest construction contract—that of building Hoover Dam.

As president of Utah Construction Company, Mr. Wattis, already suffering from the dreaded cancer, merged his company with Bechtel-Kaiser Company, Ltd., McDonald and Kahn, Inc., Morris, Knudson and Company, J. F. Shea Company and Pacific Bridge Company to form Six Companies, Inc., which captured the Hoover Dam contract with a bid of slightly less than $49,000,000. W. A. Bechtel has been nominal head of the company during Mr. Wattis' illness.

Foreign

Belgium

By D. H. MARLOW



The above Bucyrus-Erie 50-B 3-motor straight AC electric is excavating slag for **Ougree Marihaye** at their steel works at Liege. The machine loads the slag into 37-ton steel railway cars. The slag is very hard and literally has to be torn out of the 6-foot face and is usually dug about two weeks after pouring. With cars available the 50-B is making about two complete cycles per minute although loading a short, tough face with a high dump to the cars.

New England Notes

By C. B. McCOWN

The accompanying picture shows the crusher and sizing plant being erected near Durham, N. Y., by **D. Arrigoni &**

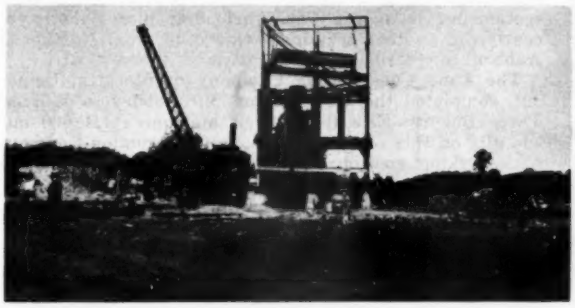
New York State Highway Chapter, Associated

Nearly 100 contractors and their guests, with many State Officials, feasted at Sharpe's Grove, Rensselaer.

The affair was the third annual clambake of the New York State Highway Chapter of the Associated General Contractors of America. The outing was informal and Richard Hopkins, Albany, President and Harry R. Hayes, Engineering Secretary, were in charge of the program.

Major Thomas F. Farrell, chief engineer, state depart-

Sons, Middletown, Connecticut. The first stone will be used on their road job at East Durham. The B-2 steamer shown



in the picture will be used to load stone at the quarry face. Charles Arrigoni and his brother Tony are supervising the erection of the quarry plant and the road job. Dionigi Arrigoni, another brother, is finishing up the parkway job near Yorktown Heights, N. Y.

Quinsigamond. Used in connection with Highway 115 the new link saves about 4½ miles between Boston and Worcester. By December 1st the road is expected to be finished to Framingham Center and the section from there to the Wellsley line will be let by the state soon.

The new highway is being constructed practically throughout on a 120-foot right-of-way and has a double-track pavement of reinforced concrete, with a 10-foot grass strip in the center protected by 8-inch curbing. Each traffic lane is 30 feet wide with 20-foot reinforced slab and macadam or oil-treated-gravel shoulders. Grade separations are being installed at all important intersections.

It is interesting to note that the original cost of the entire 40 miles of the old Boston-Worcester turnpike—built 125 years ago—was $150,000. The new road, including bridges, averages about $227,000 a mile.

Contracts for construction of the new recreation building and duplex quarters at the Newington Veterans Hospital, Newington, Connecticut, was awarded to **D. A. Sullivan & Son** of Northampton, Massachusetts. It was stated at the office of General Hines that the Newington project is on the preferred list of Veterans Buildings and construction will be commenced in the near future. The low bid was $118,797.

The accompanying picture shows the twelfth and latest Bucyrus-Erie of **C. W. Blakeslee & Sons**, New Haven, Connecticut. The 32-B with Vincent Larkin at the controls is slinging dirt on the Fairfield State Hospital job at Newton, Connecticut. C. W. Blakeslee & Sons are doing all the excavating on this job for H. Wales Lines Co., Meridan, Conn., general contractor.

Early in September the most important link of the **Boston-Worcester turnpike** was opened for traffic between Southboro and the Worcester-Shrewsbury line at Lake

The third Bucyrus-Erie for **T. J. O'Connor**, Bridgeport, Connecticut, is shown above. The 37-B with Ernest Linersey operating is excavating roadways on the Fairfield State Hospital job at Newton, Connecticut. Charlie Linersey, a brother, is also operating a Bucyrus-Erie on this job for the **Trio Construction Company**, Philadelphia.

Carlo Bianchi & Company, Incorporated, Framingham, Massachusetts, completed the section from Westboro to South Shrewsbury. Six Bucyrus-Erie GA-2s, one Type B

General Contractors of America, hold Clambake September First

ment of public works; Captain Arthur W. Brandt, highway commissioner; Charles Mullens, deputy state comptroller, and Guy Miller of the United States Bureau of Public Roads were among the guests present.

Captain Brandt congratulated the contractors on the records being made in highway construction, as the weekly mileage record of pavement laid has been broken four times this year.

JUST WHAT DO YOU WANT A CLAMSHELL BUCKET TO DO?

A Mouthful At Every Bite

If you want a bucket that digs straight down deep into the material, grabs a capacity load every time, dumps clean with no waste motion, stands up under hard work with no breakage, gives longer life, pays for itself in time saved and extra yardage — You'll want an Owen, for these are Owen proven characteristics. Write for literature explaining Owen construction features.

The Owen Bucket Company
6026 Breakwater Avenue · Cleveland, Ohio

Owen Buckets

Shots From the Firing Line — *Continued*

and one Type B-2, moved several hundred yards on this section in less than a year. Carlo Bianchi & Sons have recently bid another section of this road from Northboro to Auburn completing the pass around Worcester.

The Lane Construction Company of Meriden, Connecticut, completed the section from Shrewsbury to Worcester. Three Bucyrus-Erie B-2 shovels and one P&H 600 moved the dirt on this section. The Lane Construction Company is also working now on the first five miles of the Worcester by-pass from Northboro to Auburn.

The above picture shows the Bucyrus-Erie 21-B gas shovel recently purchased by **Nick Cena** of Waterbury, Connecticut. Erector Donovan at the controls is moving the 21-B a mile down the highway to the job. This is the latest addition to Nick Cena's shovel family of four Bucyrus-Eries.

On September 1, 263.4 miles of Federal Aid Highway had been completed in Connecticut and 47.9 miles were under construction. The estimated cost of completing this project is placed at $4,878,672.93, with $1,815,984.63 alloted as the share of the Federal Government in the improvement.

Thus Connecticut September 1 was without Federal Aid road funds available for new highway projects and was the only state of the nation in such status, according to an announcement of the Bureau of Public Roads.

It was said at the bureau that no more Federal Aid highway money for Connecticut will become available until the allotment for the fiscal year of 1933 is made late this year. The allotment must be completed before January 1 and will probably come in December or late November. Under the new apportionment, Connecticut will probably receive approximately $792,000 of the bulk appropriation authorized for the 1933 fiscal period.

New Jersey Notes

Contractors Linde-Griffith Construction Company, of Newark, New Jersey, recently had a real rush job to handle on the extension of Peddie Ditch Culvert in connection with the construction of Section 11 on Routes 21, 25 and 29, of the State Highway at Port Newark, New Jersey. The City of Newark and Essex County Mosquito Commission granted the contractors the maximum of twenty-four hours to close off the flow of Peddie Ditch by means of a bulkhead. The actual work required the complete setting of thirty-two Massey pre-cast concrete pipes, each weighing 12 tons, and sealing the joints with quick-setting cement.

Using their Bucyrus-Erie 42 for setting the pipe, with the aid of their Bucyrus-Erie Type-B to help

WAR!

Prices — f. o. b. Peoria, Illinois

TEN . . .	$1100	TWENTY .	$1900
FIFTEEN	$1450	THIRTY .	$2375
SIXTY . .	$4175		

Caterpillar Tractor Co.

PEORIA, ILLINOIS, U. S. A.

Track-type Tractors Road Machinery
Combines

(There's a "Caterpillar" Dealer Near You)

WAR between "Caterpillars" and weather — war between ample traction and treacherous mud — the victory to "Caterpillar" track-type Tractors and the spoils to Contractor Jack Harrison! A 12-mile modern highway is built from Arabi to St. Bernard through historic country where once armies fought for the possession of New Orleans. So may other contractors conquer high costs and weather hazards.

CATERPILLAR

REG. U. S. PAT. OFF.

TRACTOR

In writing to Caterpillar Tractor Co. please use post card bound in center of this number.

Shots From the Firing Line — *Continued*

remove bulkhead, Linde-Griffith were able to allow the flow of ditch to pass through new pipe culvert, that evening at 8:30 p. m., with only sixteen hours of the twenty-four having elapsed.

C. E. Ryan, of Linde-Griffith Construction Company, was in actual charge of this work, and Albert E. Lee, Resident Engineer for the New Jersey State Highway Commission.

Virginia Notes

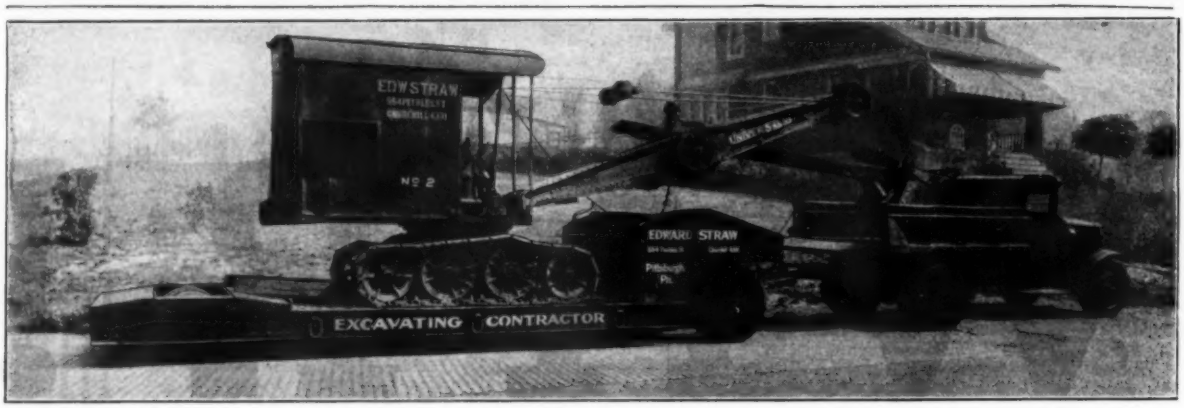
The State of Virginia is allowing no wasted time to pass in building state roads this year. A time limit of 60 days was placed on a two mile stretch of grading and road-building recently completed by the **P. T. McDermott Company** of Washington, D. C. Cutting through great hills of yellow clay and filling up deep swamps were all part of the task. To complicate the job still more, these two obstacles often occurred at the same time. The photograph below shows one of the operations—the long high yellow clay cut in the back ground and a deep swamp in the fore. The sticky wet clay roadbase called for the utmost in hauling power. At times the mud was well over the hubs, until it appeared almost impassable for any kind of vehicle. Despite all these handicaps, however, the job was finished in time.

McDermott's hauling equipment, which so well proved its power and efficiency in this instance, is comprised of Sterling model DC26 trucks with four to five-yard dump bodies, part of which are shown in the photograph. The importance of efficient and dependable hauling equipment, a fleet of fast, economical trucks designed primarily for the work at hand, cannot be overestimated by the road-building contractor. The success and profits of the job usually depend upon it.

Philadelphia and Vicinity

By M. G. CONWAY

Pennsylvania Railroad electrification between New York and Washington is now starting to take on form. The electrification has been completed between Trenton and Wilmington. Conduits and steel foundation work are now under progress between Wilmington and Washington. **The Vare Construction Company** of Philadelphia is doing this work between Wilmington and Perryville. **The James McGraw Company** of Philadelphia has started between Havre de



"Up and down the hills of Pittsburgh with 13 tons overload!"

Here's another example of how contractors are hauling *Bigger Pay-Loads, at Lower Cost*, with the WILLIAMS "Arch-Girder" Trailer:

"With our WILLIAMS Trailer of 15 tons capacity we have hauled 28 tons over Pittsburgh's hills, without strain or hazard. Have gone 158 miles in 10 hours."

Compare the WILLIAMS "Arch-Girder" Trailer with other trailers for frame construction — easier loading — easier hauling, with less gas. *Write us for description and prices.*

G. H. WILLIAMS COMPANY
603 Haybarger Lane, Erie, Pa.
Branch Offices: New York, Pittsburgh, Cleveland, Chicago

WILLIAMS
BUCKETS-TRAILERS

333

In writing to G. H. Williams Company please use post card bound in the center of this number.

When a Western No. 6 Is On Your Job

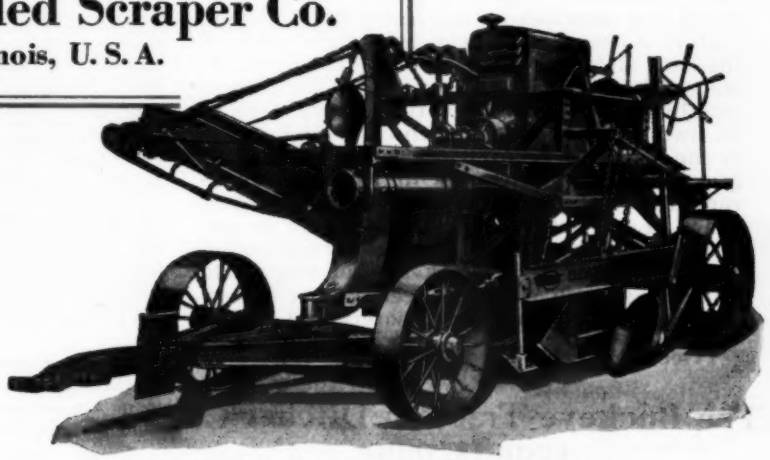
YOU have an enormous yardage coming over the elevator. Your costs are down, your production up. The work moves along without stopping.

In work to which it is suited, there is no excavating machine equal to the elevating grader. The Western No. 6, with its advanced design new from the ground up, is the last word in elevating graders. It is dependable, ruggedly constructed and easily operated.

Catalog W-31-CK, describing and illustrating this new machine is yours for the asking. Write for a copy.

Western Wheeled Scraper Co.

Aurora, Illinois, U. S. A.



Note the tubular frame; the 3-point suspension; the one-piece carrier; the stiff-leg plow control; the motor-driven belt.

WESTERN

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.

Over 30 Years' Confidence Building Backs Buckeye's *Service* Backfiller

Keeping faith with and maintaining the confidence of Buckeye owners and protecting their investment with sound mechanical engineering has established the nation-wide Buckeye reputation for dependability.

Like all other Buckeye equipment, Model F will stand the closest scrutiny and unflinchingly meet every consideration as a profitable business investment. With ample capacity to handle the backfilling behind any service class ditcher, it is an ideal construction unit for all work requiring a compact, economical, low-cost machine. It will quickly pay for itself out of the savings it effects.

There are always good reasons for exceptional mechanical achievement. Here are a few of the numerous distinguishing Model F assembly features and operating conveniences: A shipping weight of only 4 tons; power plant is a medium-speed, heavy-duty 31 h.p. motor; 2 speeds for every operation; each of the two all-steel, full-length Alligator crawlers is driven separately by a Twin Disc clutch, enabling the backfiller to turn completely in its own length; elevation and working angles of the boom are regulated through worm-and-gear; boom is adjustable in length, is conveniently raised or lowered, has a swinging range of 160 degrees, and is easily set in any position; "back-action" scraper permits operation from the spoil bank side of the ditch; and the 36-inch wide all-steel scraper is self-filling and dumping, with rooters and cutter.

Price $2125 f.o.b. Findlay.

The Buckeye Traction Ditcher Co.

FINDLAY, OHIO

There's a Buckeye Sales and Service Office near You

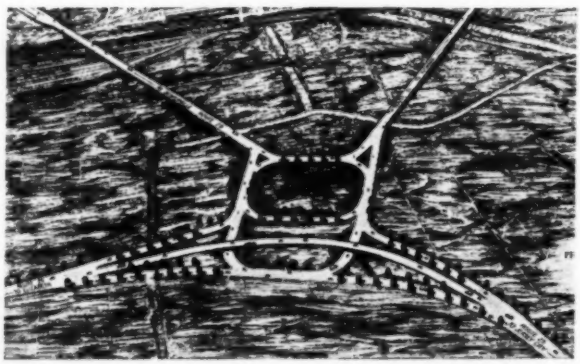
for over **Buckeye** *thirty years*

Shots From the Firing Line — *Continued*

Grace and Baltimore and the **Arundel Corporation** of Baltimore has gangs working between Baltimore and Washington.

Jafolla & Mark, Incorporated, of Philadelphia, have completed 60 per cent of the excavation on the South Broad Street subway. Our picture showing a Bucyrus-Erie 1030 electric tunnel shovel on this work also shows the top-notch crew cleaning up between ramps No. 2 and No. 3. Frank McHugh is Ramp Superintendent, Carlton Reed at the levers, Lloyd Brocius and Arthur Bliss in the pit. This crew has been averaging 150 six-yard (bank measure) trucks in a ten-hour day. This past week, they rolled up a record for a couple of days of 192 and 202 six-yard loads in a ten-hour day. This is the mucker's record in Philadelphia subway construction. Almost any hour of the above mentioned two or three days you could have seen Bill Mark around with an irremovable smile.

Joseph Herzog of Philadelphia, who has been doing the excavation for the Union Paving Company on their Marietta road job, is now moving his two Bucyrus-Erie Gas+Air machines off within the next week, having completed this job.



William Eisenberg & Sons of Camden are making remarkable progress on highway junction Routes 21, 25 and 29 on the outside of Newark. We reproduce above a picture plan showing Eisenberg's job.

We are indeed pleased to welcome a new contractor into the State of Virginia. **B. F. Parrott Company** of Roanoke moved their combination Bucyrus-Erie B-2 shovel and crane into Martinsville, Virginia, on a nice little dam job. There isn't any question but what we are going to hear from Mr. Parrott in the contracting industry within the next few years. Mr. Parrott has been connected with one of our biggest Virginia contractors.

In writing to The Buckeye Traction Ditcher Co. please use post card bound in the center of this number.

HAISS EXCAVATOR

"IT DIGS"

for Street Grading

Putting a heavy excavation tool in to take out a 6-inch cut runs the cost 'way up. That was before the Haiss Excavator came along to demonstrate how easy it is to put light excavation on a profitable basis.

Now, 14 to 20c a yard, placed in the truck is a fair estimate of shallow grading cost, including 6 to 10c. a yard depreciation (both are too high) on the machine. These are not theoretical figures, but are averaged from costs reported on representative jobs in different localities.

You can make money with a Haiss Excavator. Get acquainted with the work it has done—see Bulletin 629.

HAISS

"IT DIGS"

EXCAVATOR

PORTABLE CONVEYORS
TRUCK LOADERS
CLAMSHELL BUCKETS

GEO. HAISS MANUFACTURING COMPANY, INC.
144th Street and Park Ave., New York

Send me Performance Book 530 with specifications of the "Excavator."

Name.....

Address.....

.....

.....

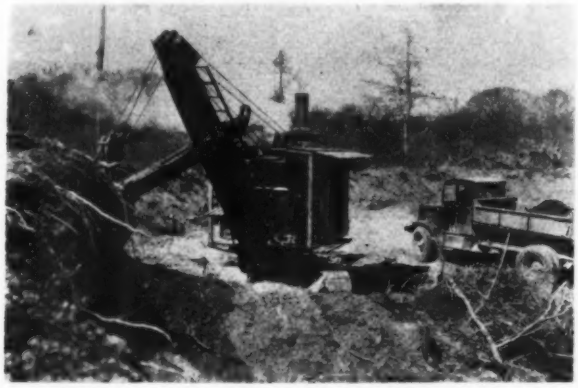
H-668

In writing to Geo. Haiss Manufacturing Co., Inc., please use post card bound in the center of this number.

Shots From the Firing Line — *Continued*

Baltimore and Vicinity

Roberts Paving Company, Salisbury, Maryland, low bidders on 8.68 miles of concrete roadway in Wicomico and Somerset Counties under Maryland State Road Contract WI-79, 81,000 yards of dirt to be handled and 95,000 square yards of concrete to be laid.



Above is shown **James Keelty's** Bucyrus-Erie Type B-3 machine which moved approximately 600 to 650 yards of dirt a day without being pushed and kept teams and trucks going continually. Operator Alexander is very much pleased with the machine and says it is one of the fastest operating machines he has ever been on.

Buffalo and Vicinity

By D. E. WHITE

The present bridge crossing the Troy and Schenectady branch of the New York Central Railroad between Latham and Crescent, will be **replaced by a modern girder span** of 40-foot width. A 32-foot bridge will also replace the present 18-foot bridge across the Hudson river at Luzerne.

An appropriation of $200,000 and a Special Condemnation Commission has been made to acquire the land necessary for the Kenwood approach to the City of Albany.

The Interstate Amniesite Company, Wilmington, Delaware, was low bidders for the construction of the section of the Whitehall-Fair Haven interstate highway in Boardman and Poultney Streets, Whitehall, N. Y.

G. E. Peterson of Bucyrus-Erie Company is now located in the Buffalo territory with headquarters at Albany. He can be located there at the University Club. Mr. Peterson comes to his new territory after two years' successful work out of the Detroit office of the same company.

WILLIAM EDWIN SCOTT

William Edwin Scott, 62, Treasurer of Scott Brothers Construction Company, Incorporated, Rome and Rochester, died suddenly at his residence in Rome on September 6th. Mr. Scott was associated with his brothers Robert G. Scott and James P. Scott in the contracting business for the past 34 years.

In 1897 they formed the partnership of "Scott Brothers" and did considerable railroad and bridge construction in the Central and Southern States. In 1908 they moved from Virginia to New York State where they handled various large contracts on the Barge Canal, numerous State highway contracts and the City subway at Rochester. In 1923 they incorporated as Scott Brothers Construction Co., Inc., under which name they have been identified with many large projects in New York State, such as the Mid Hudson Bridge crossing the Hudson River at Poughkeepsie, the Lake Champlain Bridge at Crown Point, and the Smith Street Bridge at Rochester. The corporation specialized during recent years in bridge, sewer and water contracts. Mr. Scott is survived by his two brothers.

BUCYRUS ERIE

BECO-BLOCKS

offer the greatest economy because they are:

(1) *built to stand up under greater speeds and heavier loads.*

(2) *uniform in construction.*

(3) *made only of highest quality materials by skilled workmen.*

BECO-BLOCKS

When re-ordering send us your requirements. You, too, can save the loss due to the frequent replacements of inferior frictions.

BUCYRUS-ERIE COMPANY

Specialty Department SOUTH MILWAUKEE, WIS.

At Kirkville, New York, the **Walsh Construction Company** is obtaining sand and gravel for the grading of the New York Central Railroad in Syracuse. They are using the above Bucyrus-Erie 100-B steam shovel to load 12-yard Western cars that carry the material to the fills in the yard. The photographer who took the picture tells us that the 100-B is loading at the rate of about 40 cars per hour, as he puts, "so fast that it makes a fellow wonder if he is awake or dreaming."

Actual construction of the Glens Falls-Saratoga Spring state highway will start very shortly under the direction of M. F. Dollard, Jr., of Albany. Present plans call for paving and opening to traffic of the 5-mile stretch near the Griswold tavern this year, while grading operations are expected to continue throughout the winter. Just south of the tavern the road will swing over a new route to the east of the present road so as to eliminate a number of curves and considerable grading will be necessary.

"HERCULES" (Red-Strand) REG. U.S. PAT. OFF. WIRE ROPE

is built up to

correctly established standards

The quality of "HERCULES" (Red-Strand) Wire Rope is not a matter of chance, but the result of definite and specific causes. **** In the first place, it is made of acid open hearth steel wire; then, each wire used is rigidly tested by us to make sure that it meets our exacting standards in every detail. **** Tests mean nothing unless the standard is first correctly established and then strictly adhered to. Our standards are the result of our long experience in making wire rope for hard work of all kinds.

There is a Leschen Distributor and a stock of Leschen Wire Rope at over 100 different points. The name of our Distributor in any particular locality will be furnished gladly upon request.

Made Only by

A. Leschen & Sons Rope Co.

Established 1857

5909 Kennerly Avenue

ST. LOUIS, MO.

New York - - - - - - - Chicago

Denver - - - - - - San Francisco

Shots From the Firing Line — *Continued*

It is understood that engineers are now at work mapping the southern end of the Glens Falls-Saratoga road with plans calling for the elimination of curves near the McGregor Golf Club. It is expected that the route will be paved next year.

Our hats go off to the majority of New York State contractors for not having broken faith with our Engineer-President Hoover, due to the fact that although work has been going at extremely low prices, they have continued to uphold the wage scale in the localities in which they have been working.

Erie Notes

By M. C. WATERMAN

The accompanying illustration shows the J. & M. Doyle Gas+Air shovel being operated in excavating the new U. S. Post Office basement at Erie, Pennsylvania. The Post Office, when completed, will extend from 13th to 14th Street and face the new Griswold Plaza. The dimensions of the basement excavated are 200 feet by 116 feet with a depth of approximately 12 feet. It is said that this is the largest basement ever excavated in the City of Erie.

BUSINESS CONNECTION —
A business connection sure to prove profitable for concerns doing excavating work is the Hayward Class E Clam Shell Bucket. Address The Hayward Co., 51-54 Church St., New York, N. Y.
Hayward Buckets

The entire job was handled by loading Mack trucks on the bank as shown in the photo. The Doyle Company report they handled from 1200 to 1500 yards per day under these conditions. Material was about one-half loam and the balance heavy clay with a small amount of shale at the bottom.

General Contractors for this Post Office are Coath and Goss of Chicago. Mr. Plank, their General Superintendent, stated the Gas+Air shovel did excellent work, in fact, the smoothest job of basement grading he ever saw. The machine was operated by Wayne Burger of Erie.

The J. & M. Doyle Company have two Bucyrus-Erie Type 1030 machines in addition to the Gas+Air. They have owned some nine or ten Bucyrus-Eries.

Pittsburgh and Vicinity

By J. S. WEAVER

John W. Butler, McKeesport, has been awarded the contract for curbing Seventh Street, Clairton, Pennsylvania.

The McCully Street and Royce Avenue improvements in Mt. Lebanon have been awarded to the Ben Construction Company, Pittsburgh.

The above illustration shows how Tri State Engineering Company of Waynesburg is handling the removal of a troublesome slide on Highway 89. Other measures having failed, the State engineers decided that, in order to stop the slide, it would be necessary to dig into the fill and remove the material causing the trouble. Tri State put one of their Bucyrus-Eries on the job (they own five of them) and the machine was cutting in when we happened along with the camera. Operator R. A. Shields was pulling the levers.

Following is an excerpt taken from the Pittsburgh Post-Gazette issue of September 9th, 1931:

CONTRACT LET FOR HUGE DAM

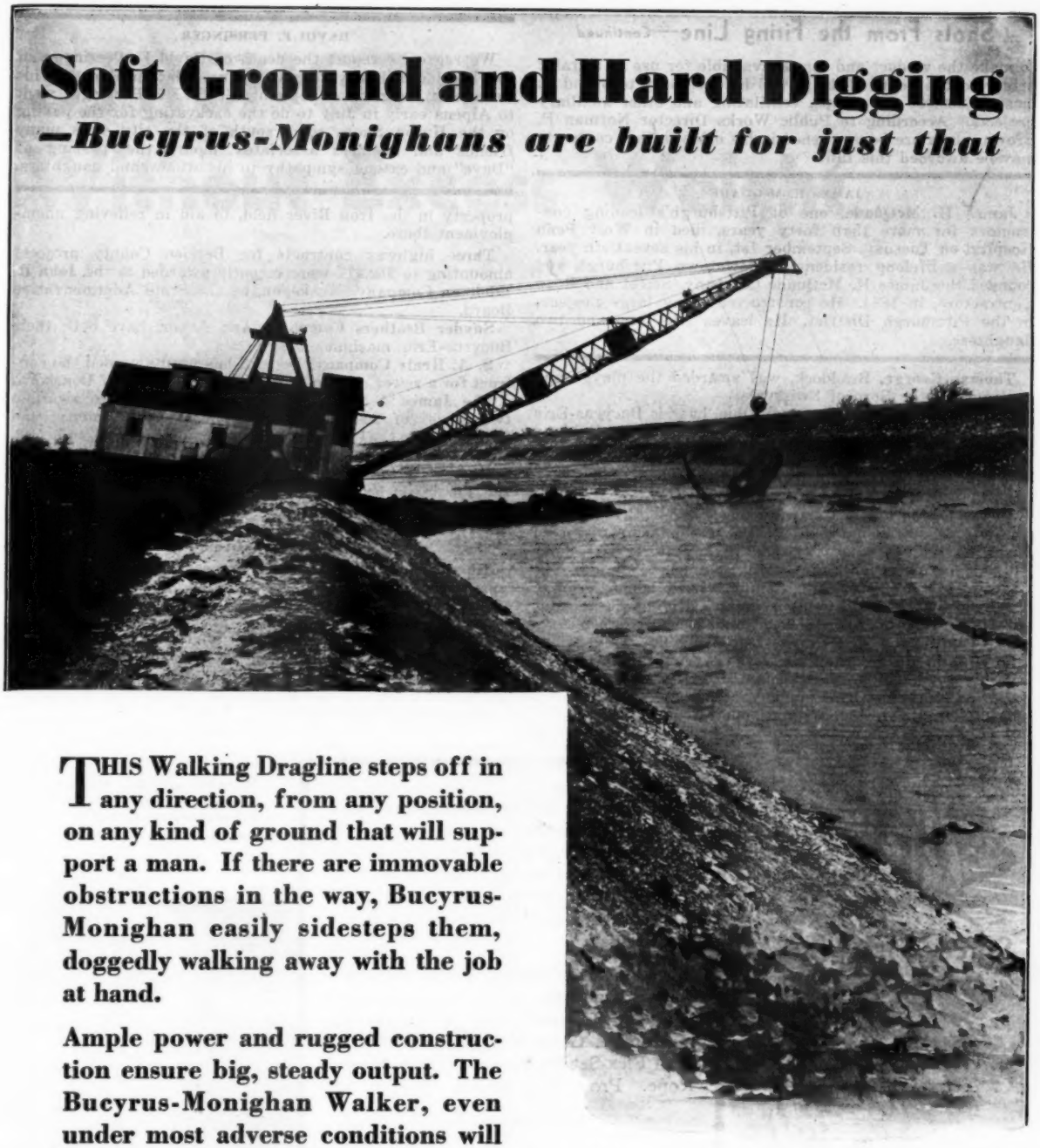
Pymatuning Job is Given Cleveland Contractors

Harrisburg, Sept. 8.—The state water and power resources board today awarded the contract of Pymatuning Dam to C. R. Cummins, Inc., Cleveland. The company's bid for rolled embankment construction was $339,567.00. The board announced that the work on the dam would be started within 30 days and is to be completed before June 1, 1933. The Cummins company, so far as practicable, will give preference to local labor. Bids for construction of the dam were opened her September 1st. The board adjourned its meeting Friday without awarding a contract and met today to award the contract. Thirty contractors presented bids. The dam will be 2,400 feet long with a maximum height of 50 feet and will be constructed across the Shenango river in Crawford County near Jamestown. It will create the largest lake in Pennsylvania with an area of 16,200 acres, approximately 3,000 acres larger than the area of Lake Chautauqua. The dam was proposed as a means of flood relief in times of high water and of drought relief in dry periods.

Allegheny County Commissioners and officials of the Pittsburgh and West Virginia Railroad executed agreements during the past week for the purchase by the county of the Wabash bridge over the Monongahela River and the tunnel beneath Mount Washington. Bridge and tunnel will cost the taxpayers of Allegheny County $3,000,000. In order

Soft Ground and Hard Digging

—*Bucyrus-Monighans are built for just that*



THIS Walking Dragline steps off in any direction, from any position, on any kind of ground that will support a man. If there are immovable obstructions in the way, Bucyrus-Monighan easily sidesteps them, doggedly walking away with the job at hand.

Ample power and rugged construction ensure big, steady output. The Bucyrus-Monighan Walker, even under most adverse conditions will lower costs, speed up digging, save time and operate economically. Bucyrus-Monighan Company, Chicago, Illinois.

. . . It will pay you to investigate the record of Bucyrus-Monighan Walkers.

BUCYRUS MONIGHAN

Walking Draglines up to 8 cubic yards

***Sold by* BUCYRUS-ERIE COMPANY, South Milwaukee, Wis.**

Representatives throughout the U. S. A. Branch Offices: Boston, New York, Philadelphia, Atlanta, Birmingham, Pittsburgh, Buffalo, Detroit, Chicago, St. Louis, Kansas City, Dallas, San Francisco. Offices or Distributors throughout the world.

B-7

Shots From the Firing Line—*Continued*

to make the viaduct and tunnel available for use as a traffic artery to the South Hills, it will be necessary to spend at least $1,200,000 for ramps, ventilating and other auxiliary projects. According to Public Works Director Norman F. Brown, plans are being rushed in his office so that contracts may be awarded this fall.

JAMES H. McQUADE

James H. McQuade, one of Pittsburgh's leading contractors for more than forty years, died in West Penn Hospital on Tuesday, September 1st, in his seventieth year. He was a lifelong resident of downtown Pittsburgh and founded the James H. McQuade Company, Street and Road Contractors, in 1884. He constructed many large projects in the Pittsburgh District. He leaves two sons and two daughters.

Thomas George, Braddock, was awarded the playground contract for the Boro of Swissvale.

Peter Milliron, East Liverpool, Ohio, has his Bucyrus-Erie "1020" shovel working on a sanitary sewer in the Oakland district of East Liverpool.

Detroit and Vicinity

By L. E. MacDONALD

Pickands, Mather & Company has given notice that operations will be resumed at the Caspian mine, in the Iron River district, October 15th and perhaps later on in the fall one or two more mines will commence mining. The Caspian is one of the largest employers of labor there.

Wayne County Road Commission are driving the pile for the new bridge on Ecorse Creek and West Jefferson Avenue with their 41-B Bucyrus-Erie machine. This bridge will straighten and widen Jefferson Avenue at this point.

Harry S. Peterson, of Ishpeming, superintendent for the **Jones & Laughlin Ore Company** Michigan mines, has received word to resume mining operations at the Forbes property in the Iron River field, to aid in relieving unemployment there.

DAVID F. PERSINGER

We regret to report the death of David F. Persinger, of the Persinger Excavating Company, Lincoln Park, at his cottage at Long Lake, September 8th. Mr. Persinger went to Alpena early in July to do the excavating for the paving on the Huron Shore road, south of the city. His many friends and business associates mourn the passing of "Dave" and extend sympathy to his widow and daughters.

Three highway contracts for Berrien County projects amounting to $52,417 were recently awarded to the **John R. Edelman Company**, Muskegon, by the State Administrative Board.

Snyder Brothers Company, Ann Arbor, have both their Bucyrus-Erie machines busy.

S. A. Healy Company, Detroit, has been awarded the contract for a sewer section to be built for the City of Dearborn.

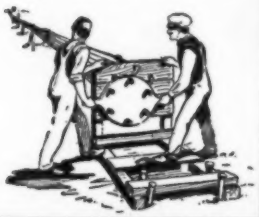
The James A. McKay Company, Detroit, were awarded two pieces of 20-foot pavement in Macomb County, one 0.610 miles at $13,951.27, the other piece 0.788 miles at $25,769.63.

Hector DeNolf has his Bucyrus-Erie machine rented to the Persinger Excavating Company, doing the excavating for their job on Outer Drive.

Ohio Notes

How work on highways can proceed in winter, providing jobs and Saturday night pay checks for many previously unemployed men, is shown by the program recently mapped out by Governor White of Ohio. In that state the amount of money usually spent for bridges will be augmented materially to permit of the building of 300 bridges located near centers of population. It is planned to have the contracts let by November 1st and contractors will be required to proceed with the work regardless of weather conditions.

Since Blast Holes were Drilled by Hand



THE first B & B Wire Ropes were made on an old fashioned "rope walk" in 1876, when many blast holes were drilled by hand, when dredges had no cutters, scrapers used horse power, and such powerful rope as Yellow Strand was not essential.

Since its introduction, Yellow Strand's elasticity and strength have been equal to every advance made in excavating machinery. Great economies are effected with Flex-Set Preformed Yellow Strand Rope. Prove it by a trial.

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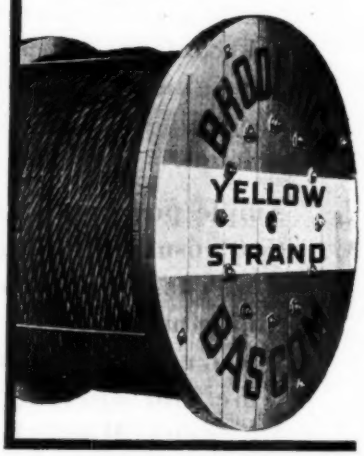

P9

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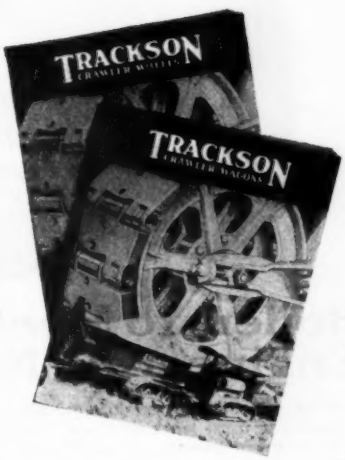
STRENGTH
Without Excess Weight

ALL STEEL CONSTRUCTION gives Trackson Crawler Wheels and Wagons greater strength with less weight. There is no excess load to haul around. Every pound is productively justified. Consider these further advantages of Trackson Equipment: The 7-yard wagon has a loading height of only 61½″ without flareboard. Being a cart-type wagon it pulls easier, turns shorter and stops jack-knifing. A 26″ clearance makes it easy to pull on and off the dump. A properly proportioned body makes it dump clean. The wheels are easy running and built for long life. The wearing parts are of heat-treated alloy steel, and are *readily renewable when worn*. These are but a few of the many Trackson features which combine to produce more satisfactory wagons and wheels for dirt-moving work. Let us tell you about them.



Either or both of these booklets will gladly be sent on request.

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Shots From the Firing Line — *Continued*

Chicago and Vicinity

By H. C. HELT

John W. Griffiths & Sons Company of Chicago, was successful bidder on the **new Government Post Office** building for Chicago. This is about a ten million dollar project and will give employment to "several" men during the coming winter. Work has been started on the job already.

The same company was awarded the first section of the **Calumet Sewage treatment plant** at 115 and Cottage Grove Avenue in Chicago for the Sanitary District. This job involves some 40,000 cubic yards of excavation and will be handled by a dragline.

On the second section of this same job, **Herlihy Brothers Mid-Continent Construction Company** of Chicago were the low bidders. There are approximately 259,000 cubic yards of excavation on this job and work will be started at once. This sewage treatment plant is the largest project started this year by the Sanitary District.

The dispute between downstate taxpayers and Chicago Federation of labor over wage rates for road work has temporarily been settled and **a scale of wages was adopted** by the commission at Springfield, Illinois, about September 1st which permitted bids to be taken for about eleven million dollars worth of road work on September 8th. This letting together with letting on the 14th and 15th will amount to about 20 million dollars and will provide employment for about 20,000 men for the coming months.

The chief engineer of the Illinois Highway Department stated at the letting that all projects must be started at once to help the unemployment situation.

Minnesota, Iowa and Dakota Notes

By H. L. JONES

Governor Shafer of North Dakota recently named the **new Highway Commission** for that state. A. D. McKinnon has been appointed as Chief Highway Commissioner. J. A. Dinnie, of Grand Forks, was reappointed and Howard R. Lampmann, of Willston, is the third member. Mr. McKinnon has been connected with the highway department for many years.

The office of the **Iowa State Highway Commission,** which has been at Clinton for several years, has been removed to Bellevue, where the Scenic Highway is now under construction.

Minnesota will have $59,926,105 available for highway construction and maintenance during 1931 and 1932, according to figures recently compiled by the Minnesota State Commission of Finance.

Carl R. Carlgren, a general contractor of St. Paul, has been appointed a member of the Minnesota State Industrial Commission, succeeding Henry McColl.

Upper Michigan Notes

By W. A. MURRAY

Through the courtesy of **J. H. Brown,** Master Mechanic at the **Plymouth Mine,** Wakefield, Michigan, we reproduce above one of the floats that took part at the 4th of July parade. This float representing the Plymouth Mine was built of wood and tar paper and boys from 7 to 10 years of age were the "crew." This is the second year that this float has taken part in the Wakefield parade; the first year it won first prize and this year second prize.

St. Louis and Vicinity

By A. J. KOENIG

The Riley Construction Company was awarded contract for the construction of the Mailine Creek Sewer between Riverview Drive and the Mississippi River at a price of $43,753. This section will be open channel 20 foot deep with a sixty foot bottom and 110 feet at the top. The engineers estimate for this project was $61,000; nine bids were received, the highest bid being $63,504, the only bid above the engineers estimate.

The Sangamo Construction Company of Springfield, Illinois was awarded contract for the construction of an 180 foot concrete bridge near Buckhart, Illinois at a price of $17,005.

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When you have a new job, different and difficult . . . when you must work in a new location under difficult working conditions . . . no matter what the job, we can build a boiler to meet your needs . .. . a boiler that will give you power, speed, durability, rugged strength and efficiency.

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If you are accustomed to hard service, suppose you see what a Williamsport Rope will do for you.

And, too, if Williamsport performs so well in times of stress, you may expect a longer service from it in ordinary work.

Consult freely our engineers on your problems. They have rendered some valuable service to wire rope users—they may help you with their advice.

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Shots From the Firing Line — *Continued*

Following the settlement of the wage controversy in Illinois, the State Highway Department received bids on Sept. 8th on 96.86 miles of paving, 26.51 miles of grading and 26 bridge sections. **Clinton Bridge Company, George W. Condon, Cameron-Joyce & Company, Breeden Bros. Construction Company, and Martin Wunderlich** were among the low bidders.

Three contracts for paving roads were let recently by the St. Louis County Court. **The Bangert Brothers Construction Company** of St. Louis will pave the Destrahan Road, from Columbia Bottoms School to the new school. **Kunze Construction Company** has contract for paving Woodlawn Avenue and **The Independent Quarries Company** will build an asphalt road from Madison Ferry Road to Destrahan road.

Missouri Notes

By W. C. VINES

Carlon Construction Company, of Maplewood, is using a 1035 clamshell for handling materials on their eleven-mile paving project at Ridgeway in Harrison County. Equipped with a 45-foot boom and one-yard Blaw Knox bucket, the 1035 is shown in the above picture loading to a Blaw Knox bin. The project was finished in the remarkably short time of three months. Bob Hutcheson was in charge and Ole Olson operated the 1035.

Mulvill Brothers of Alton, Illinois, have a fourteen team outfit, dump-wagons, fresnoes, blacksmith outfit, shanties and camp equipment, that they desire to sell or would consider an exchange on a gas shovel. A letter addressed to Box 185, Alton, Illinois, will reach them.

Southern Notes

By R. S. WELFER

South Carolina **awarded contracts on 28 projects** in late August. More than 500 bids were received.

Smaller lettings were held in North Carolina, Georgia and Tennessee in September.

C. E. Bussey of Montgomery completed his work at Benton and is now located near Walterboro, S. C.

R. T. Smith of Macon received work orders on one project only in Georgia and has two shovels at work near Tallapoosa.

J. E. Hawkins is grading a state project near Irwinton, Georgia.

MacDougald Construction Company of Atlanta report good progress on all jobs and very little idle equipment.

L. J. Cousins, operator, formerly located with Roquemore Gravel Company at Montgomery, is now located at Memphis.

L. C. Gillam, who operated shovels many years in Alabama, is now located in Atlanta.

J. H. Doby is about ready to return to work after an enforced vacation because of an injury to his hand.

F. L. Busby, Birmingham, after searching for work as an operator in the Atlanta District, received a call from the Newell Contracting Company and is now on their work in Arkansas.

H. L. Symonds is operating a 20-B Bucyrus-Erie steam shovel at Dry Branch, Georgia.

Griffin Construction Company, Atlanta, is rushing to completion the Broad Street viaduct. This new span replaces a very old steel structure.

Augusta, Georgia, at an early date, expects to see the **completion of repairs to bridges** damaged by the unprecedented flood of two years ago. The latest step is to build approaches to the Fifth Street bridge. **Wannamaker & Wells**, of Orangeburg, S. C., built the bridge. **Mallory & Nash**, of Atlanta, will build the South Carolina approach and the

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pin size _____ jaw opening _____
Signed _____
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Hooper Construction Company, of Bunnell, Florida, will build the approach on the Georgia side.

River Notes

By W. W. WHORLEY

Brooks-Callaway Company is making splendid progress on their levee contract near Lake Cormorant, Mississippi. During the month of August their 10-yard electric tower excavator handled approximately 280,000 yards. J. L. Brooks is personally supervising this work and the above output is evidence of his ability as a dirt mover.

Ward-Hayes Construction Company has about completed their drainage work for the City of Birmingham and expect to move the bulk of their equipment to levee work recently awarded by the U. S. Government. One job is located on the east bank of the Mississippi a short distance below Memphis and the other is a car haul job involving about one million yards near Helena, Arkansas.

The J. J. McCaughey & States Contracting Company is moving dirt steadily on their Reid-Bedford contract. The job is being handled with a Marion 5241 steam dragline, a Page 2½-yard Diesel truck-mounted dragline and a Northwest gasoline dragline for auxiliary purposes. Shelby Borhem is superintendent on this work.

Boyce & Igo are making the dirt fly on their work at Plaquemine Point, Louisiana, and if the present rate of progress is maintained will finish their contract in record time.

The Grasser Contracting Company has finished erection of a Bucyrus-Erie Class 230 steam dragline with 175-foot aluminum alloy boom and are moving this machine to work recently secured in the Vicksburg District. Frank Hingle is in charge of operations.

Texas Notes

By C. F. BARTON

J. E. Smith and Sons, of Noble, Oklahoma, are at work on U. S. Route 60 and Texas Route 33 where they have a 140,000 yard job. They will also build the bridges and culverts

on this job. They are using their 32-B, recently purchased, and are well pleased with its performance. In the accompanying picture the 32-B is loading to Strand Dump Wagons using three-up teams for hauling.

San Francisco and Vicinity

By J. H. SACKETT

Plans are being prepared by Engineer C. R. Browning of the Irvine Company in Orange County, Tustin, California, for the following work at the head of Newport Bay:

> Combination rolled fill and hydraulic fill dam, to be 38 feet high and 1800 feet long with storage capacity of 14,000 acre feet, involving 240,000 cubic yards earth fill and 2,500 cubic yards concrete in spillway. Installation of pumping plant to be located 1½ miles up the reservoir basin for the dam.

The estimated cost of the above work is $150,000.00

A bond election will be held during October by the Santa Clara Valley Water Conservation District, Auzerais Building, San Jose, Santa Clara County, California, to vote on issuing bonds in amount of $5,500,000 for the construc-

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Proof Coil Chain
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Steel Loading Chain
Stud Link Anchor Chain
Close Link Anchor Chain
Conveyor Chain
Sling and Crane Chain
Log or Binding Chain
Derrick Chain
Railroad Switch Chain
Railroad Brake Chain
Log Haul-Up Chain
Grab-Slip Hooks
Cold Shuts
Wagon and Stay Chain
Dredge Chain
Special Chains to Blue Print
Missing Links
Anti-Skid Chain for Trucks
Bright Machine Chain
Chain and Ring Dogs
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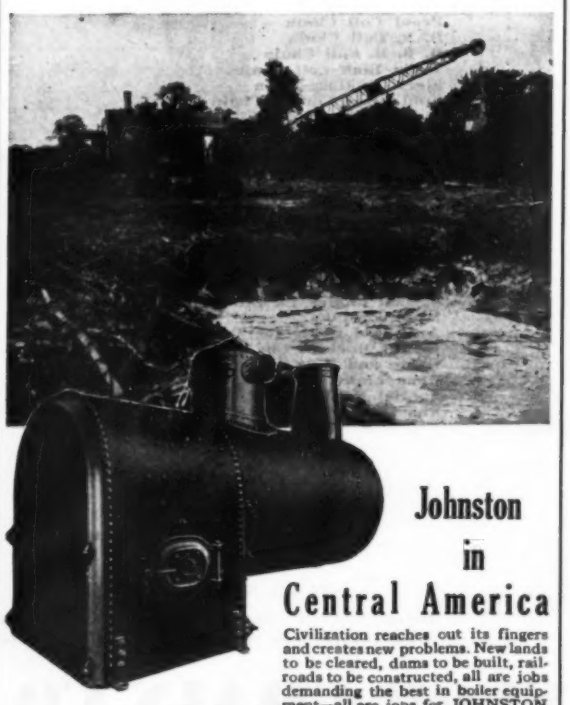
Shots From the Firing Line — *Continued*

tion of the following works, report covering same having been filed with the district by Consulting Engineer Fred H. Tibbetts, Alaska Commercial Building, San Francisco.

1. Construction of five earth fill or earth and rock fill dams as follows: Coyote Creek Dam to store 60,000 acre feet, to be 200 feet high and involving 1,900,000 cubic yards material. Almaden Creek Dam, 2,500 acre feet capacity. Calero Creek Dam, 9,000 acre feet capacity. Guadalupe Dam, 3,500 acre feet capacity. Stevens Creek Dam, 4,000 acre feet capacity.
2. Installation of three pumping plants.
3. Installation of one power plant.
4. Construction of 35 miles of canals.

WILLIAM H. HEALY

William H. Healy, President of Healy-Tibbetts Construction Company, died August 11th at Hartsook, Mendocino County. Mr. Healy's death, due to acute indigestion, accurred very suddenly as he was taken ill at midnight after a day of apparent excellent health and died at 2:45 in the morning. About ten weeks prior to his death Mr. Healy had suffered a heart attack but had apparently fully recovered, although he was still under medical care. He was born in San Francisco and had spent most of his life there. In addition to millions of dollars worth of highway construction contracts, his firm directed many other major projects in the West during the last quarter century, including contracts for the erection of the five million dollar coaling station at Samoa, the China Basin in San Francisco, Pier 45 at North Beach, as well as many other piers along the San Francisco waterfront. Mr. Healy was very well known throughout the contracting industry and his death came as a distinct shock to his many friends. He is survived by his widow and two sisters.



Johnston in Central America

Civilization reaches out its fingers and creates new problems. New lands to be cleared, dams to be built, railroads to be constructed, all are jobs demanding the best in boiler equipment—all are jobs for JOHNSTON Boilers built especially for Contractor's equipment.

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TRADE NOTES

Blaw-Knox Company, Pittsburgh, Pennsylvania, has recently taken over the manufacture and sale of the Ateco hydraulic dirt mover for the territory east of the Rocky Mountains as well as in foreign countries, according to a recent announcement. Other well known Ateco products manufactured and sold by Blaw-Knox Company are Bulldozers, Scarifiers, Tamping Rollers and combinations of these machines.

Following the death of C. D. Fleming, Vice-President of **The Cleveland Tractor Company,** Cleveland, Ohio, his former duties as Director of Domestic Sales have been assigned to three District Sales Managers as follows: W. E. Miles controls all of the territory from a line running between Chicago and New Orleans eastward to the coast. G. W. Pickering handles all of the territory from a line running from western boundary of North Dakota to western boundary of Texas, east to western line of eastern territory; also Canada. H. E. Orr has charge of the territory from eastern boundary of Montana to eastern boundary of New Mexico, west to Pacific Coast. These three men have been sales assistants to Mr. Fleming for several years, so are well trained and thoroughly competent to take over the full responsibilities of sales manager in their respective territories.

The Lee Trailer & Body Company, Plymouth, Indiana, has been absorbed by **Little Giant Products, Inc.** The building of bodies and trailers will be continued at Plymouth, but the plant operation will be directed from Peoria. There will be no change in the personnel but there will be additions in all departments.

Stop the Landslide!

(Continued From Page 495)

only thing left for him to do is drive. When he makes his drive he has to meet the conditions which he finds in the field and down goes his price, up comes his bid for the used equipment, down go the credit bars and down goes the pen into the red ink.

It's a hell of a spot for an industry to be in. The thing has gone on so long now that the buyers are all spoiled. The contractors know that they can get stuff on their own terms almost at their own price. They play one house against the other and sit back and wait for the final slash and final drop of blood. Some of them know that they can buy on ridiculously lenient credit terms and they make this a factor in the competition for their business. A lot of them have learned that they can save money by renting equipment, so they get the equipment men to scrapping over rental prices. It has reached the point now where the unlucky man is the one who gets the business. In our opinion this willingness on the part of the contractors to

HUG

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Built to Meet a condition

THE HUG COMPANY, Highland, Illinois

have the machinery sellers playfully cut each other's throats has been a tremendous factor in the beating down of bids for public and private work, and thinking contractors have frankly told me that the lax condition of credits in machinery houses has been a factor in launching "gypos" and irresponsibles in the contracting craft.

As for the "gypos"—well, they are having the laugh. One of them recently told me how he used a new gasoline shovel for three months at a total rental of $350. He told me that when the job was finished he told the equipment house to come and get it—and he laughed when he told me about it. And that laugh wasn't alone on the outfit that came and got that shovel that had three months of use—and abuse—and only got $350 out of the mess. That laugh is on every equipment house in California. It is on every equipment manufacturer, and every legitimate contractor and on every taxpayer in the district; on the distributors because their sales policies made the laugh possible; on the factory sales manager because they have been looking so hard at the sale close by that they couldn't see the ones far off; on the contractors because it demoralized their business; on the taxpayers because they got a rotten piece of work for their money, and we might say the laugh is on the community for the thing that made it possible is a big factor in wrecking our whole economic set-up.

We have spoken particularly of Southern California in this connection because it happens to be the closest spot in the range and we know the most about it, but we have good reason to believe that the same condition exists, in large degree, throughout all the Western distributing centers and even in the highly civilized east with some exceptions.

The situation is as black as the inside of a cow; but it isn't hopeless—not by a long shot. The machinery distributor we know can match brains with any business group in the country. The fact that they have been intrigued into warfare instead of sane business competition doesn't alter our opinion of their intelligence. And as long as they can think, there is a chance for improvement of conditions, for not a thing but good old common sense is ever going to pull us out of a tough spot.

The first thing to do is get together. This isn't a problem for one man or five men to tackle. It's a problem for community groups to handle. When this get-together occurs, check the deadly hardware at the door, but don't turn the meeting into one of those sickening sweet chamber of commerce things where everybody slaps everybody else on the back and then proceeds to dodge the issue. We can even have a few harsh words if we keep in mind the purpose of the meeting and the general objective we all want to reach.

We haven't talked about a plan of action but don't think we haven't got one; so have all you equipment men. We've all been thinking about this condition for a year and out of all the plans in all the heads there is certainly enough of sane thought to piece together some sort of a structure to stop the landslide.

The main thing is to get all the personalities in the equipment business together on common ground. Surely we've all taken enough of a trimming that when someone says, "Let's go," we will have a representative gathering. And that's the purpose of this article. The response will indicate whether we are ready to think and work our way out, or have got to have a few more socks on the chin to get us to the point of sanity.

Cop to young man driving with one hand: Say, young man, why don't you use both hands?

Young man: I would, but I have to use one for driving.

One of the draglines which Swinney & Coleman use on a Mississippi levee job

Model EH Kohler Plant, specially protected against weather by a metal housing

DOWN ON THE LEVEES... THEY USE KOHLER LIGHT

ONE of the largest earth-movers in the South is the firm of Swinney & Coleman, Opelusa, La. Read what Mr. E. R. Swinney of that contracting firm has to say about Kohler Electric Plants.

"We are now running four dragline machines night and day and each is equipped with a Model E Kohler Electric Plant as an integral part of the machine. When we get a new machine, a Kohler Plant goes on at once. We get a 1500-watt plant and spend about $5 to put it on the machine.

"We have run some of the light plants three years. All we ever do to them is to change the oil every Monday morning and the brushes in the generators about once a year. I do not know the life of a Kohler Plant as we have not worn one out yet. Our plants at this time of the year are running from about 5 P.M. to 7 A.M. or about 14 hours."

Kohler Electric Plants—ranging in capacity from 800 watts to 10 K.W. and generating standard electric current at 110 or 220 volts A.C. or D.C.—save time and money on scores of important earth-moving and engineering projects. They provide bright and sure light for all night-jobs, giving a bigger earning-power to expensive equipment and cutting the overhead per hour of labor. Send coupon for complete information, specialized to the contractor's need. Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis.—*Branches in principal cities*. . . . Manufacturers of Kohler Plumbing Fixtures.

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Holing Through the Big Bend Tunnel

(Continued From Page 486)

ern cars hauled by a General Electric battery locomotive working on 36-inch gauge track. W. H. Onks is day operator and Walker Page night operator, the job working two 10-hour shifts. Operations at this Camp Two end are under supervision of A. C. Goodwin, Superintendent. The rock from Camp Two tunnel is hauled to a dump of about two to three thousand feet west from the tunnel.

Standard gauge used for hauling in No. 1

In the tunnel at Camp One a Thew 1¼-yard machine handles the mucking, with Operator Peter Hurt on days and J. N. Luck on nights. Superintendent J. W. Tullah is in charge of the operations from No. 1 Camp.

Serving the shovel in the east end is an 8-ton Whitcomb storage battery locomotive hauling 6-yard Koppel standard gauge cars. Use of standard gauge on tunnel work of this kind is an innovation by Haley, Chisholm and Morris, which has proved entirely satisfactory. Cars are switched out in the tunnel, made up into trains and hauled by a 12-ton Whitcomb gas dinky approximately a mile to the dump, a long fill across low-lying ground to straighten the C. & O.'s approach to the tunnel.

Progress from both east and west ends is at present running about 40 feet per week.

Steel lining proves advantages over timber

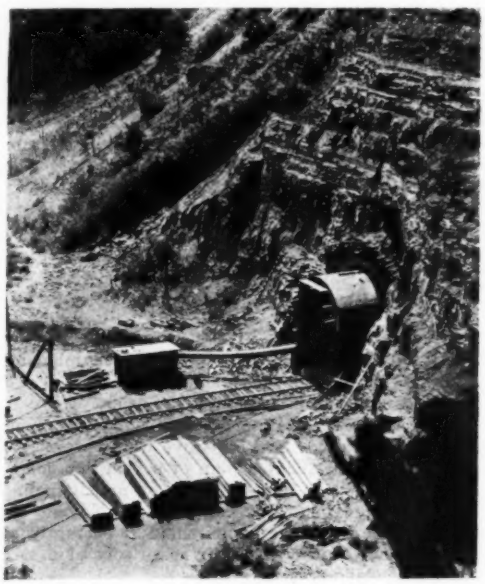
In the east cut, Truscon steel lining is being used in place of timber lining and has proven very successful. This new type of lining is made up of 8-

East portal after removal of forms.

inch "H" beams for plumb posts, 5-inch "H" beams for plates, curved flat bars ½-inch thick, 3 inches wide and 10 feet long to form the arch. To these ribs are bolted shaped, ⅛-inch thick, steel plates 17 inches wide and 37 inches long to form the roof lining. 5,000,000 pounds of this steel lining will be required for the tunnel where it is being used. It gives ample strength, is lighter and more convenient to handle than the timber and Haley, Chisholm and Morris have found it can be put in quicker, easier and cheaper.

Concrete set-up of unusual interest

The most modern devices for installing the concrete lining are used. Two special Blaw-Knox tunnel form sections are used for pouring the walls and roof sections. These sections are each 40 feet long and weigh approximately 150,000 pounds. They are built to the exact size and shape required and are moved on a specially equipped scaffold flat car. Hydraulic jacks on the scaffold raise the forms to place when it has been lined up properly. Small screw jacks under the side walls then take up the load and hold the form in place. The concrete is then poured into doors in the walls and shot with



Blaw-Knox lining form preparatory to pouring of the portal section at the east entrance.

a concrete gun into the roof form. This gun was just being installed at the time of our visit and is built by Pressed & Welded Products Company, of Pittsburgh, Pennsylvania. It takes the mixed concrete and forces it out through the driving nozzle by means of compressed air. Mr. Morris writes after the gun had poured 10 shifts that it seems to be handling the work satisfactorily.

Excavating and concrete work carried on simultaneously

Thirty-six hours are allowed for setting and concrete is poured every day, the excavating operations in the end of the tunnel being contained at the same time. The schedule for pouring is as follows:

first day, one 40-foot lining section with Blaw-Knox form No. 1; second day, second 40-foot lining section with Blaw-Knox form No. 2; third day, one-half width 160-foot section floor, footing and ballast wall; fourth day, another lining section with form No. 1; fifth day, another lining section with form No. 2; sixth day, the other half of the 160-foot floor, footing and ballast wall.

The level concrete floor is 10 feet wide and 6 inches thick. At each side is the ballast wall rising 24 inches from the floor. Behind this is a trough 24 inches wide to take care of drainage, and then the footing for the walls poured to the same height as the ballast walls and extending back against the solid rock. Blaw-Knox steel forms are used for pouring these ballast walls and footings.

As the floor is completed rock ballast is placed for the temporary track that carries the service trains.

Planning cuts material handling costs in concrete plant

Gravity has been called on to do most of the work of moving materials through the concrete plant. A site was selected alongside a fill near the mouth of the tunnel at Camp One where aggregates could be dumped from a trestle into a hopper over an Erie bin and aggremeter. This feeds directly into the 1-yard Jaeger Mixer. Cement is carried by gravity through a 6-inch pipe directly from car to mixer. The mixer dumps its batch to the hopper of an elevator which is hoisted up a 130-foot tower and dumps to the hopper of a 12-inch pipe which carries the concrete to another hopper over the loading track. This dumps to the scaffold car pouring bins which are mounted on a dump car.

Limestone sand for fine aggregate

Considerable saving was made in the cost of aggregates by the substitution of limestone sand (waste fines) from the Acme Limestone Company at Alderson for the sand usually used for fine aggregate. Acme Limestone Company was given the contract to supply the coarse aggregate for the job. Their plant was wasting a considerable quantity of fine limestone fragments which were a by-product of their plant.

A Bucyrus-Erie steam clamshell-crane is used for general utility work and for stockpiling shipments of limestone sand which are being accumulated to take care of requirements when pouring of the concrete gets in full swing. This is done because the sand output of the supplying quarry is limited and there is no stock available there to draw from.

For the Chesapeake & Ohio Railway Company, C. W. Johns, Chief Engineer; I. L. Pyle, Assistant Chief Engineer; E. G. Rice, District Engineer, and C. B. Porter, Resident Engineer—all of the Construction Department of the Railway Company—are in charge on this Big Bend job.

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DRAGLINE-CLAMSHELL-SHOVEL OPERATOR

10 years' experience on Bucyrus-Erie gasoline machines on highway grading and materials handling. Willing to go anywhere in U. S. A. Married. Can do own repair work and furnish A-1 references. Present location, Illinois. Box 1901.

DREDGE ENGINEER-SHOVEL OPERATOR

20 years' experience on all types of excavating, drainage, stripping and pit work. Will go anywhere in U. S. A. Excellent repairman. Can furnish reliable references. Married. Present location, Indiana. Box 1902.

SHOVEL OPERATOR

Nine years' experience on gasoline, steam and Bucyrus-Erie Gas+Air machines. Willing to work anywhere in U. S. A. Married. Can do own repair work and furnish excellent references. Present location, North Carolina. Box 1801.

SHOVEL OPERATOR

Experienced on Bucyrus-Erie Gas+Air and steam machines on highway grading and basement excavating. Will go anywhere in U. S. A. Single. Can do own repair work. Reliable references furnished. Present location, Pennsylvania. Box 1802.

SHOVEL OPERATOR

Experienced operator on gasoline and steam machines. Four years on highway construction. Can cut slopes, grades and get good yardage. Can handle own repair work. Reliable references furnished. Willing to go anywhere in U. S. A. Present location, Alabama. Box 1803.

DRAGLINE-CRANE-SHOVEL OPERATOR

10 years' experience on Gas+Air, gasoline and steam draglines, cranes and shovels. Above experience includes years spent on highway grading, basement excavation, drainage and coal stripping work. Prefer operating a Bucyrus-Erie shovel anywhere in country. Can do own repair work. A-1 references furnished. Single. Present location, Pennsylvania. Box 1705.

DREDGING SUPERINTENDENT

Qualified to take full charge of dredging operations. 20 years' experience on drainage and levee work. Willing to go anywhere in U. S. A. Can do own repairing and furnish reliable references. Located in Minnesota. Box 1707.

CLAMSHELL-SHOVEL OPERATOR

23 years' experience on steam and gasoline machines. Experience covers years operating on all makes of machines on highway and railroad grading, quarry loading, over burdens stripping. Willing to go anywhere in U. S. A. Excellent recommendations furnished. Can do own repair work. Present location, Pennsylvania. Box 1708.

DRAGLINE-SHOVEL OPERATOR

Experience covers 17 years' on steam, gasoline, and Gas+Air machines on railroad and highway grading, pile driving and dragline work. Can do own repair work. Married. Excellent references. Present location, Kentucky. Box 1903.

DRAGLINE-CRANE-SHOVEL OPERATOR

15 years' experience on Gas+Air, gasoline and steam machines on levee, railroad grading and highway work. Prefer operating Bucyrus-Erie Gas+Air or steam machine. Will go anywhere. Married. Can do own repairing. Reliable references. Present location, Michigan. Box 1904.

CLAMSHELL-SHOVEL OPERATOR

Have operated Gas+Air, gasoline and steam shovels for 18 years on highway and railroad grading and on pipe line work. Willing to go anywhere on any type machine. Can furnish A-1 references and can do own repair work. Married. Present location, New Jersey. Box 1702.

CLAMSHELL-CRANE-SHOVEL OPERATOR

23 years operating gasoline, electric and steam clamshells, cranes and shovels. Fully experienced on railroad and highway grading and quarry work. Willing to go anywhere and on any type of job. Excellent repairman. Married and A-1 references. Present location, Illinois. Box 1703.

SHOVEL OPERATOR-DREDGE ENGINEER

Experience includes 17 years on coal stripping, highway grading, quarry work and dredge operating. Prefer shovel work in Central States but will consider any reasonable offer anywhere in country. Can do own repairing and can furnish reliable references. Married. Present location, Ohio. Box 1704.

SHOVEL OPERATOR

12 years' experience on Gas+Air and steam machines on highway grading and basement excavating. Can furnish reliable references and can do own repairing. Will go anywhere. Location in Minnesota. Box 1804.

DRAGLINE AND SHOVEL OPERATOR

16 years' experience as shovel operator. Married, 36 years of age. Have operated practically all makes of machines, and have 10 years' experience as dragline operator. Can handle steam, Diesel, electric or gasoline machines. Have worked on highway and railroad grading, rock excavation in quarry, drainage and irrigation and dredging and also gold dredging. Prefer position on Bucyrus-Erie. Box 1805.

DRAGLINE AND CRANE OPERATOR

Fully experienced on Diesel, electric, gasoline and steam machines on highway excavating and dredging work. Will go anywhere in U. S. A. Married. Can do own repair work and furnish excellent references. Present location, Florida. Box 1806.

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ONE 18-B BUCYRUS, ⅞-yard dipper on full revolving caterpillars. Box 182-SS.

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BUCYRUS 30-B DIESEL Shovel No. 4008, 25-foot 9-inch Boom, 14-foot Dipper Handle, one-yard Dipper. Located vicinity Dallas, Texas. Good operating condition. Price $3000.00. Box 217-SS.

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BUCYRUS-ERIE E-2 DIESEL DRAGLINE, caterpillar mounted, 50-foot boom, 1¼ cubic-yard Omaha bucket, Kohler lighting plant. Machine was new in July 1930 and has been used less than six months. Located vicinity Omaha, Nebraska. 243-SS.